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Past speculations of future health technologies: What did they predict?

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ABSTRACT

Objective: To describe and classify health technologies predicted in forecasting studies.

Design and methods: Description of the results of previously identified forecasting studies with a classification of health technologies according to their type, purpose and clinical use; relating these to the original purpose and timing of the forecasting studies.

Data sources: Health-related topics and technologies predicted in 15 forecasting studies identified in a previously published systematic review.

Main outcome measure: Outcomes related to i) each forecasting study including country, year, intention and forecasting methods used and ii) the predicted technologies including technology type, purpose, targeted clinical area and forecast timeframe.

Results: Of the 896 identified health-related topics and technologies, 685 (76.5%) were health technologies with an explicit or implied health application and included in our study. Of these, 19.1% were diagnostic or imaging tests, 14.3% devices or biomaterials, 12.6% information technology systems, eHealth or mHealth, and 12% drugs. The majority of the technologies were intended to treat or manage disease (38.1%) or diagnose or monitor disease (26.1%). The most frequent targeted clinical areas were infectious diseases followed by cancer, circulatory and nervous system disorders. The most frequent technology types were: for infectious diseases - prophylactic vaccines (45.8%); for cancer - drugs (40%); for circulatory disease - devices and biomaterials (26.3%), and for diseases of the nervous system - equally devices and biomaterials (25%) and regenerative medicine (25%). The mean timeframe for forecasting was 11.6 years (range 0-33 years, median=10, SD= 6.6). The forecasting timeframe significantly differed by technology type (p=0.002), the intent of the forecasting group (p<0.001), and the methods used (p<001).

Conclusion: Our study provided detailed description and classification of predicted health-related technologies from prior forecasting studies. This is crucial in preparing healthcare systems for adopting new innovations. Further work is needed to test the accuracy of predictions made.

Strengths and limitations of the study

- The study is a comprehensive description and classification of health-related technologies predicted in 15 forecasting studies identified in a previously published systematic review.
- The study summarises the forecast technologies by type e.g. medical devices, diagnostic tests or drugs; by clinical purpose e.g. prevention, diagnosis or treatment and by targeted clinical area by ICD10 chapter; and relates this to the forecasting purpose and timeframe.
- The analysis and the health-related technologies identified are constrained by the methods used in the forecasting studies for example by the areas of interest of the experts involved.
- Although the study highlights the identified technologies, the retrospective accuracy of the studies remains to be researched.

INTRODUCTION

People are in general living longer and surviving previously life threatening illnesses. A proportion of this effect is attributed to the use of novel health interventions and technologies, such as new vaccines to prevent disease; new diagnostic tests to diagnose diseases earlier and with improved accuracy; and new drugs, devices and surgical procedures to treat diseases more effectively. Technological advances and innovation are leading to new health interventions becoming available to healthcare markets at an increasing speed; these often cost more than current alternatives and significantly affect the cost of healthcare services and delivery. To ensure that patients can access the most effective and cost effective interventions, and because many health systems work within constrained budgets, healthcare systems need to be prepared to respond to new developments. A crucial step in such preparation is the accurate identification and forecasting of likely significant technological healthcare developments.

Forecasting is widely used for planning and strategic decision making around industrial and economic development at organisational, regional and national levels.⁵ Within healthcare, forecasting can be used to build strategies for supporting innovators and companies to develop new interventions; to plan future research programmes and delivery of healthcare; and to prepare health services and personnel to respond to technological developments of benefit to patients and service provision. Health technology forecasting uses various methods such as Delphi surveys and reviews of the literature^{6,7,8} to identify emerging health technologies that are intended to address important unmet healthcare needs or that need additional evaluation, and to analyse their potential impact on patients and health systems.⁴ To get the maximum benefit from forecasting, it is important that the methods used to identify emerging interventions and technologies are appropriate for the aims and timeframe of the forecasting exercise and also as accurate as possible.

In a recent systematic review⁹ we found 15 forecasting studies with 3 to 20 year timeframes that identified emerging health-related topics and technologies from 12 high income countries, including six from the United Kingdom (UK). Here we describe and classify the health technologies predicted in the forecasting studies

according to their type, purpose and clinical use. We relate these to the forecast time period and develop an overview of the technological and clinical frontiers of innovation in health and healthcare provision.

METHODS

See table 1 for a full list of the 15 studies identified in our prior systematic review. We extracted all forecast topics from the 15 forecasting studies using a standardised set of data for each of these predicted topics and on the source study. Data related to the forecast topics included the name of the topic as written in the forecasting reports and papers, and the predicted forecast timeframe. Data related to the study included the country or region of the forecast, year the study was undertaken, its intention and remit, the study forecasting timeframe, and the number and type of forecasting methods used.

Identification and inclusion of health technologies

For final inclusion and analysis, topics had to be health technologies as defined by the National Institute of Health Research (NIHR) Health Technology Assessment (HTA) programme¹⁰: "any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease". We also included topics that related to the recognition of, or change in, health states or emotions, or health-related behaviours. All topics needed to have an explicit or implied health-related application or identified patient group for final inclusion. Topics were excluded if they related exclusively to foods, plants, animals, insects, new sources of fuel or energy, environmental contamination, legislation or health insurance.

Two authors (CP and LD) independently scrutinised each identified topic and applied the inclusion and exclusion criteria. Where there was insufficient information on a topic to make the inclusion/exclusion decision, we undertook brief and very limited searches on the Internet to find additional information.

All topics classed as a health technology with an explicit or implied health-related application, were subsequently coded based on their technology type, intended purpose, and targeted clinical use:

Technology type: we used broad categories: assistive devices and rehabilitation aids; devices and biomaterials; diagnostic tests and imaging; drugs; information technology (IT) systems, electronic health systems (eHealth) and mobile health (mHealth); medical equipment; non-surgical therapy; organisational programmes; prophylactic vaccines; population programmes; regenerative medicine approaches; and therapeutic procedures.

Technology purpose: we used categories that relate to the intended point on the patient pathway: health promotion and the prevention of disease; diagnosis and monitoring of disease; treatment and management of symptoms and disease; and rehabilitation. We supplemented these with two groupings that categorised technologies that support the provision of care i) supporting patients receiving care and designed to be used by individuals (patients, caregivers or healthcare professionals) and ii) supporting the provision of care and/or increasing service efficiency.

Targeted clinical area (specialty): we used the international statistical classification of diseases and related health problems 10th revision (ICD10)¹¹ chapter headings relating to diseases and other morbid conditions (chapters I-XVII); symptoms, signs and abnormal findings (chapter XVIII); injuries, poisoning and other consequences of external causes (chapter XIX); external causes of diseases and morbid conditions chapter XX); and factors influencing health status and contact with health services for people not currently sick (chapter XXI). Chapter XXI includes contraception, technologies used in population screening, health promotion and disease prevention, and general rehabilitation.

All topics with disputed inclusion, exclusion or categorisation were initially discussed between two authors (LD and CP) and disagreements resolved where possible. Where disagreements remained, topics were discussed with the other authors as a group and the final categorisation agreed through consensus.

Technology forecast timeframe: for each health-related technology forecast we calculated the difference in years between each technology's predicted year of impact as identified in the original study, and the year when the prediction was made, i.e. the year of the original study. Technology forecasts were classified as short term if their forecasting timeframe was less than 3 years, short to medium term if it was 3-10 years, medium to long term if it was 11-20 years and long term for those with timeframes of more than 20 years. Although the original systematic review excluded forecasting studies which exclusively adopted a short time frame of less than 3 years, some studies with longer time frames also provided predictions with shorter time frames, and these were included in the analysis.

Data analysis

We analysed the data using IBM SPSS statistics (version 22) for Windows. We present descriptive analyses as means and standard deviations (SD) for normally distributed continuous variables. Statistically significant differences were determined using ANOVA for continuous normally distributed data and X² for dichotomous variables.

RESULTS

We identified 896 predicted topics from the 15 forecasting studies. Of these, we judged that 685 (76.5%) were health-related technologies with an explicit or implied health-related application. The most frequently excluded topics were those that described advances in the underpinning scientific knowledge (8.7%), such as determination of whole human DNA base sequence and identifying genetic links to diseases. A full list of the included health-related technologies is attached as an online appendix.

Of the 685 health-related technologies, 52.3% were forecast from 6 studies by governmental organisations (such as the UK Department of Trade and Industry¹²), 21.9% by commercial/consultancy organisations (such as British Telecommunications plc¹³), 14.5% by policy planning groups (such as Loveridge et al 1995⁶), 8.9% by research groups (such as those by Stevens et al 1997⁷), and 2.5% by non-profit organisations (such as Institute of the Future¹⁴). Looking at the

purpose of forecasting, our data showed that two thirds (68%) of the health technologies were forecast for policy planning purposes, 18.1% for research purposes and 13.9% for commercial purposes.

Nearly half (48.9%) of the identified technologies were from 6 UK-based studies and reports, 15.0% were from Japan, 11.7% from the Netherlands, 11.4% from the United States of America (USA) and 8.0% from Canada. The remainder were from a homogenous group of developing countries and South Africa (3.8%), other European countries (0.9%) and China (0.3%).

Technology type

Of the 685 health technologies forecast, 19.1% were diagnostic tests and imaging technologies, such as advanced ultrasound imaging systems and molecular diagnosis; 14.3% were devices and biomaterials, such as tissue engineered devices and drug impregnated devices; 12.6% were IT systems, eHealth and mHealth, such as electronic prescriptions and telemedicine; 12.0% were drugs, such as new anaesthetic vapours and electronically activated drugs; and 11.7% were regenerative medicine approaches, such as gene therapy for diabetes and widespread use of gene therapy for familial hypercholesterolemia (Table 2 and online appendix). Regenerative medicine approaches were the most commonly forecast technologies (23.2%) by studies with a commercial intent while diagnostic tests and imaging were the most commonly forecast technologies by studies with policy planning and research intentions (20.6% and 23.4% respectively) (p<0.001).

Technology purpose

Of the 685 health technologies included in the forecasting reports, 38.1% were for the treatment and management of symptoms and disease, such as development of effective treatment for amyotrophic lateral sclerosis and the practical use of gene therapy for genetic disorders; 21.6% for the diagnosis and monitoring of disease, for example a diagnostic bio-chip for cancer and the further development of 3D imaging techniques; 13% for health promotion and the prevention of disease, such as the first effective vaccine of HIV and DNA vaccines for AIDS, malaria, hepatitis B and certain cancers; 10.2% for supporting the provision of care, for example tele-monitoring and teleconsultation; 8.0% for supporting patients receiving care, such as smart pill

bottles to remotely monitor medication use and thought-controlled robots for personal healthcare; and 4.7% for rehabilitation, for example artificial legs and robotic prosthetics.

Technologies for treatment and disease management were the most common regardless of the intention of the study: 35.8% among studies with a commercial intent, 35.8% for policy planning and 48.4% for research.

Targeted clinical area

Using the ICD10 codes to define the targeted clinical area, just over half of the health technologies (50.4%) were for diseases and conditions that were not specified or that could not be coded or that crossed multiple specialities. Of the 340 health technologies that could be coded to a specific ICD10 chapter, the top five targeted clinical areas were: 1) infectious and parasitic diseases ICD-I (14.1%), such as development of vaccines for AIDS and vaccines for malaria, 2) neoplasms ICD-II (11.8%), such as expanding metal stents for oesophageal cancer and diagnostic biochip for cancer, 3) diseases of the circulatory system ICD-IX (11.2%), such as artificial muscles in replace of heart transplants and implantable vascular stents, 4) diseases of the nervous system ICD-VI (10.6%), such as artificial brain cells and artificial peripheral nerves and 5) factors influencing health status and contact with health services ICD-XXI (10.3%), such as a personal wearable health monitor and extension of average lifespan to over 100.

Congenital malformations, deformations and chromosomal abnormalities ICD-XVII and symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified ICD- XVIII had the fewest forecast technologies (0.3% each).

Table 3 shows the technology types and purposes for the forecast technologies within the five most frequent targeted clinical areas. The most frequent technology type forecast for infectious and parasitic diseases were prophylactic vaccines (45.8%); for cancer were drugs (40%); for diseases of the circulatory system were devices and biomaterials (26.3%); for diseases of the nervous system were devices and biomaterials (25%) and regenerative medicine (25%); and for factors influencing health status and contact with health services including screening and rehabilitation,

devices and biomaterials (31.4%). The most frequent technology purpose was health promotion and disease prevention for both infectious and parasitic diseases (ICD-I) (60.4%) and factors influencing health status and contact with health services including screening and rehabilitation (ICD-XXI) (51.4%). Technologies for treatment and disease management were most common for cancer (55.0%), diseases of the circulatory system (65.8%) and nervous system disorders (61.1%).

Technology forecast timeframe

Data was available to calculate the prediction timeframe for 607 of the identified health technologies. The mean timeframe for forecasting predictions was 11.6 years (range 0-33 years, median=10, SD=6.6). There was a significant difference in the mean prediction timeframe by technology type (p=0.002), with non-surgical therapies having the shortest mean forecast timeframe (9.07 years) and population health programmes having the longest mean forecast (14.53 years) (Table 4). There were no statistically significant differences in the mean duration of the technology prediction timeframe by the technology purpose and we were not able to detect any particular trend in the technology types or purposes of forecast over time.

There was a statistically significant difference in the forecast timeframe by the type of group undertaking the forecasting (p<0.001): 58% of the long-term forecasts (>20 years) were made by policy planning groups and 51% of short-term forecasts (<3 years) were by research groups.

Technologies forecast by studies with research intentions had the shortest mean forecast timeframe (4.49 years) while those for policy making had the longest timeframe (14.16 years) (p<0.001). Similarly, technologies forecast by researchers had significantly shorter mean timeframes (3.56 years) compared to those made by governmental agencies which had the longest mean forecast timeframes (13.42 years) (P<0.001).

There was a statistically significant difference in the mean forecast timeframe when considering the forecasting method (p<0.001) (Figure 1). Technologies forecast using methods that included creativity-based methods which require brainstorming, such as scenario building, had a significantly longer forecasting timeframe (13.5)

years) compared to those did not include creativity-based methods such as literature reviews (9.7 years) (p<0.001). On the other hand technologies forecast using methods that included evidence-based methods such as literature reviews and evidence from health technology assessment (HTA) organisations, had significantly shorter forecasting timeframes (8.2 years) than those that did not include evidence-based methods (10.8 years) (p<0.001).

DISCUSSION

Being aware of forthcoming developments in healthcare and preparing for the future is essential for health policy makers, whether developing healthcare policy, directing future research or commissioning health services. We found that more than two thirds of the identified technologies were forecast for policy planning purposes and over half were forecast by governmental organisations, and that the majority of long-term forecasts were made by policy planning groups as opposed to research groups. This finding supports the premise that the majority of forecasting is carried out for service preparedness and long-term planning, and strategic decision making.⁵

Our study identified and classified a number of important health-related technologies, which health services may have already had to manage or will have to do so in the future. Our finding that nearly 60% of the technologies were either for the treatment and management of symptoms and disease or for the diagnosis and monitoring of disease can perhaps be explained by the methods used for forecasting. Many of the studies involved soliciting the opinion of experts and, although it is not possible to be certain about the areas of interest of those involved, their expertise may have made them more likely to focus on diagnosis and treatment than, for example, organisational programmes or rehabilitation. Regenerative medicine approaches were the most commonly forecast technologies by studies with a commercial intent.

The four clinical areas with the greatest number of forecast health technologies: infectious diseases, cancer, and circulatory and nervous system diseases and disorders, include many of the major causes of death and disability in countries today. Again we are not able to determine if this merely reflects the interests of the groups carrying out the forecasting and their areas of expertise or whether it truly

represents the technology innovation frontier. It is understandable that the forecasts for infectious disease included many prophylactic vaccines as these have proven to be a cost effective preventive strategy for their prevention.¹⁵ In cancer, forecasting included both drugs and diagnostic tests and imaging, perhaps reflecting increasing targeting in novel cancer therapies.^{16,17} Several forecasts of regenerative medicine approaches for nervous system diseases and disorders is also interesting, with many of these diseases not currently curable or effectively treated.^{18,19}

Our finding that forecasts which included creativity-based methods such as scenario building and analysis had, on the whole, longer forecast timeframes than studies that included evidence-based methods may have a rationale. Evidence-based methods require there to be research evidence on technologies which will therefore probably be nearer to any predicted impact. In contrast, creativity-based methods require experts to think more widely about what the future could be, and are not therefore constrained by what is actually being currently researched and published. This may also explain our finding that just over half of the short-term forecasts were made by research groups who may be more likely to use published evidence to inform their deliberations.

We believe that this is the first study to comprehensively identify and summarise health-related technologies predicted in past forecasting projects and to categorise and describe them. Although as many predicted topics as possible were included, we did exclude a substantial number. This was often because we could not envisage a future health application or because there was insufficient information to make a judgement (and many topics had very sparse titles or descriptive information). By excluding topics in this way, we may have excluded some that would have had an explicit health application within a reasonable timeframe.

Our description and classification of predicted health-related technologies from prior forecasting studies provides an overview of the technological and clinical frontiers of innovation in health and health care provision. To complete our evaluation of the accuracy of previous forecasting predictions and the forecasting methods used, the accuracy of the predictions made should also be assessed. This may be difficult across all technology types and clinical areas, but possible by limiting the evaluation

to specific clinical areas and/or technology types or to those topics with more obvious health applications and timeframes that have already occurred.

CONTRIBUTERS

All authors have directly participated in the planning and execution of the study. LD extracted the study data. LD and CP independently reviewed the technologies to be included. LD and CP drafted the paper and DW, SS and AS critically revised the manuscript. All authors agreed the final version of the paper. All authors had full access to all of the data.

DISCLAIMER

This report presents independent research funded by the National Institute for Health Research (NIHR). The views expressed in this publication are those of the authors and not necessarily those of the National Health Service, the NIHR or the Department of Health.

COMPETING INTERESTS

The authors report that they do not have any conflicts of interest.

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DATA SHARING

A full list of health technologies included in the study is available in a supplemental document submitted with this article. More details on data are available from the corresponding author at I.doos@bham.ac.uk.

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Table 1: The 15 forecasting studies identified in the prior systematic review

Study name or first author	Year of forecast	Country
Dutch Steering Committee on Future Health Scenarios (STG) 1988	1986	Netherlands
Spiby, 1988	1988	UK
Loveridge et al 1995	1994	UK
Stevens et al, 1997	1995	UK
Karim, National Research and Technology Foresight Project, 1999	1996	South Africa
Operating theatre of the year 2010; Department of Trade and Industry report 1999	1996	UK
Cahill and Scapolo, 1999	1998	Europe
Daar et al, 2002	2002	Developing countries
Technology foresight towards 2020_China	2003	China
British Telecommunications (BT) calendar	1997 & 2005	United Kingdom (UK)
Tremblay and Yiu, 2006	2006	Canada
Food and Drug Administration (FDA) surveys	1998 & 2008	United States of America (USA)
Institute of the Future, 2009	2009	USA
Science & Technology Foresight Survey, 2010	Every 5 years from 1971, latest survey 2009-10	Japan
UK technology and innovation futures for the 2020s, 2010	2010	UK

Source: Doos et al 20169

Table 2: Health technologies by technology type

Devices and biomaterials 98 14 IT systems, eHealth and mHealth 86 12 Drugs (not prophylactic vaccines) 82 12 Regenerative medicine 80 11 Medical equipment 37 5 Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0		Number	%
IT systems, eHealth and mHealth 86 12 Drugs (not prophylactic vaccines) 82 12 Regenerative medicine 80 11 Medical equipment 37 5 Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Diagnostic tests and imaging	131	19.1
Drugs (not prophylactic vaccines) 82 12 Regenerative medicine 80 11 Medical equipment 37 5 Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Devices and biomaterials	98	14.3
Regenerative medicine 80 11 Medical equipment 37 5 Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	T systems, eHealth and mHealth	86	12.6
Medical equipment 37 5 Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Orugs (not prophylactic vaccines)	82	12.0
Therapeutic procedures 36 5 Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Regenerative medicine	80	11.7
Unknown 33 4 Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Medical equipment	37	5.4
Organisational programmes 26 3 Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	herapeutic procedures	36	5.3
Prophylactic vaccines 24 3 Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Jnknown	33	4.8
Population programmes 24 3 Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Organisational programmes	26	3.8
Non-surgical therapy 15 2 Other 9 1 Assistive devices 4 0	Prophylactic vaccines	24	3.5
Other 9 1 Assistive devices 4 0	opulation programmes	24	3.5
Assistive devices 4 0	lon-surgical therapy	15	2.2
	Other	9	1.3
Total 685 10	Assistive devices	4	0.6
	otal	685	100.0

Table 3: Technology type and purpose for the five most common ICD_10 chapter headings

	Infectious	Cancer	Circulatory	Nervous	Health status,	
	disease	ICD_II	disorders	system	screening,	
Technology type	ICD_I		ICD_IX	ICD_VI	rehab ICD_XXI	Total
Assistive devices	-	-	-	-	3 (8.6)	3 (1.5)
Diagnostic tests and imaging	5 (10.4)	12 (30.0)	7 (18.4)	6 (16.7)	2 (5.7)	32 (16.2)
Devices and biomaterials	3 (6.3)	1 (2.5)	10 (26.3)	9 (25.0)	11 (31.4)	34 (17.3)
IT systems, eHealth and mHealth	146	-	-	1 (2.8)	3 (8.6)	4 (2.0)
Drugs (not prophylactic vaccines)	10 (20.8)	16 (40.0)	7 (18.4)	2 (5.6)	5 (14.3)	40 (20.3)
Regenerative medicine	-	2 (5.0)	7 (18.4)	9 (25.0)	-	18 (9.1)
Medical equipment	2 (4.2)	-	-	1 (2.8)	1 (2.9)	4 (2.0)
Therapeutic procedures	1 (2.1)	1 (2.5)	3 (7.9)	4 (11.1)	-	9 (4.6)
Organisational programmes	3 (6.3)	-	-	-	1 (2.9)	4 (2.0)
Prophylactic vaccines	22 (45.8)	-		-	1 (2.9)	23 (11.7)
Population programmes	1 (2.1)	2 (5.0)	2 (5.3)	1 (2.8)	3 (8.6)	9 (4.6)
Non-surgical therapy	-	2 (5.0)		1 (2.8)	-	3 (1.5)
Other/ unknown	1 (2.1)	4 (10.0)	2 (5.3)	2 (5.6)	5 (14.3)	14 (7.1)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)
Technology purpose						
Diagnosis & monitoring of disease	7 (14.6)	12 (30.0)	8 (21.1)	7 (19.4)	1 (2.9)	35 (17.8)
Health promotion & disease prevention	29 (60.4)	5 (12.5)	5 (13.2)	1 (2.8)	18 (51.4)	58 (29.4)

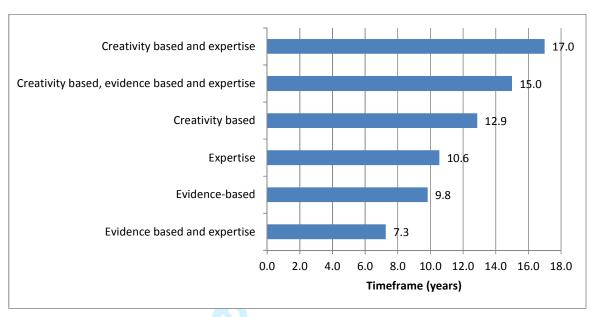
Treatment & disease management	11 (22.9)	22 (55.0)	25 (65.8)	22 (61.1)	1 (2.9)	81 (41.1)
Rehabilitation	0 (0.0)	0 (0.0)	0 (0.0)	4 (11.1)	15 (42.9)	19 (9.6)
Other and unknown	1 (2.1)	1 (2.5)	0 (0.0)	2 (5.6)	0 (0.0)	4 (2.0)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)

Table 4: Mean technology prediction timeframe (years) by technology type*

Technology type	Number	Mean timeframe Years (SD)
	4.4	
Non-surgical therapy	14	9.07 (5.7)
Diagnostic tests and imaging	113	10.11 (6.0)
Drugs (not prophylactic vaccines)	75	10.31 (6.3)
Therapeutic procedures	31	10.45 (8.2)
Organisational programmes	25	10.48 (5.3)
IT systems, eHealth and mHealth	77	11.08 (5.5)
Devices and biomaterials	88	11.93 (6.8)
Assistive devices	3	12.33 (17.9)
Other/ unknown	40	13.35 (7.2)
Medical equipment	36	13.53 (2.7)
Regenerative medicine	73	13.58 (7.4)
Prophylactic vaccines	13	14.00 (6.3)
Population programmes	19	14.53 (5.9)
Total	607	11.59 (6.6)
*p<0.002	4	

^{*}p<0.002

Figure 1: Mean forecast timeframe by methods of forecasting*



*p<0.001

Report name (year)	Intention of the study	Technology Name	Tech. time frame	Purpose of the technology	Specialty	Technology type
BT Calendar 1997	Commercial	Artificial muscle use in place of heart transplants	1	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
BT Calendar 1997	Commercial	Telemed link to home with home blood test kit	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial intelligence based elderly and handicapped support devices	1	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial pancreas	1	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 1997	Commercial	Artificial blood	3	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 1997	Commercial	Disability assistance devices using thought recognition	3	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial ears	3	Rehabilitation	VIII - ear	Regenerative medicine
BT Calendar 1997	Commercial	Electronic implants used to stimulate muscles in disabled people	5	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
BT Calendar 1997	Commercial	Home (health) diagnostic systems, daily/real time check-up	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Virtual Reality based exercisers in homes	1	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Synthetic retinal implants for simple vision	8	Rehabilitation	VII - eye	Regenerative medicine
BT Calendar 1997	Commercial	Personal wearable health monitor	6	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial heart	13	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine

	Γ	T	T	T		Ι
BT Calendar 1997	Commercial	Genetic screening	10	Health promotion	XXI -	Population
		widely used		and prevention of	screening,	programmes
				disease	rehab	
BT Calendar 1997	Commercial	Fine particle beam	12	Treatment and	Other -	Regenerative
		gene engineering		management of	generic	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial senses,	15	Rehabilitation	XXI -	Devices and
Bi calciladi 1997	Commercial	sensors directly	13	Renabilitation	screening,	biomaterials
		stimulating nerves			rehab	Diomaterials
DT Calarada :: 1007	Camananahaial	1	1.0	11aaltha		Danislatian
BT Calendar 1997	Commercial	Prevention of	16	Health promotion	II - cancers	Population
		cancer		and prevention of		programmes
				disease		
BT Calendar 1997	Commercial	Custom foods for	13	Treatment and	Other -	Other
		particular medical		management of	generic	
		conditions will		symptoms and		
		exist.		disease		
BT Calendar 1997	Commercial	Genetic programs	23	Health promotion	V - mental	Population
		to enhance		and prevention of	health	programmes
		human well-being		disease	ricareri	programmes
BT Calendar 1997	Commercial	Artificial lungs	18	Treatment and	X -	Regenerative
Bi Calellual 1997	Commercial	Artificial fullgs	10			_
				management of	respiratory	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial kidneys	18	Treatment and	XIV -	Regenerative
				management of	genitourina	medicine
				symptoms and	ry	
				disease		
BT Calendar 1997	Commercial	Artificial brain	20	Treatment and	VI -	Regenerative
		cells		management of	nervous	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial liver	23	Treatment and	XI - GI tract,	Regenerative
Di Calcilladi 1997	Commercial	7 ii ciii ciai ii vei	23	management of	dental	medicine
				symptoms and	health	medicine
					Health	
DT Calamila (4007	Camana	Fortamaian of	22	disease	VVI	I I a lua a com
BT Calendar 1997	Commercial	Extension of	23	Health promotion	XXI -	Unknown
		average lifespan		and prevention of	screening,	
		to over 100		disease	rehab	
BT Calendar 1997	Commercial	Artificial brain	28	Treatment and	VI -	Regenerative
		implants		management of	nervous	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial	28	Treatment and	VI -	Regenerative
		peripheral nerves		management of	nervous	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial legs	33	Rehabilitation	XXI -	Unknown
Di Calcilaal 1997	Commercial	, a cincial icgs		Renabilitation	screening,	CHRIGWII
					_	
					rehab	

BT Calendar 1997	Commercial	Fully functional artificial eyes	33	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	laser activated drug capsules	3	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	ultrasound or radio activated capsules	3	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	blood analysis chips	3	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
BT Calendar 2005	Commercial	e-Baybies electronic conception	5	Health promotion and prevention of disease	XXI - screening, rehab	Unknown
BT Calendar 2005	Commercial	Instant electronic identification of pathogens	5	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
BT Calendar 2005	Commercial	Online surgeries dominate first line medical care	5	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
BT Calendar 2005	Commercial	active skin	5	Unknown	XII - skin	Unknown
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs)	5	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	automated pain relief for soldiers	5	Treatment and management of symptoms and disease	XIX - injury	Devices and biomaterials
BT Calendar 2005	Commercial	bacteria in toothpaste to attack plaque	5	Health promotion and prevention of disease	XI - GI tract, dental health	Non-surgical therapy
BT Calendar 2005	Commercial	e-baybies, binary conception	5	Health promotion and prevention of disease	XXI - screening, rehab	Unknown
BT Calendar 2005	Commercial	hand-held scanner to detect tumours using tissue resonance interferometer	5	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
BT Calendar 2005	Commercial	smart pill bottles remotely monitor medication taking and use alarms	5	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth

BT Calendar 2005	Commercial	diabetes cure via stem cell research	5	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
BT Calendar 2005	Commercial	Use of human's own tissues to grow replacement organs	8	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	Artificial senses	8	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
BT Calendar 2005	Commercial	context sensitive cyber drugs	8	Treatment and management of symptoms and disease	Other - generic	Unknown
BT Calendar 2005	Commercial	electronic stimulation of brain sensations as recreational substitute for drugs	8	Other	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Custom (GM) foods for particular medical conditions will exist.	8	Treatment and management of symptoms and disease	Other - generic	Other
BT Calendar 2005	Commercial	Gene-gel stimulation of re- growth of natural teeth on demand	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	retina regeneration using foetal retinal cell injection	8	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	tooth regeneration	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 2005	Commercial	plastic bones	8	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
BT Calendar 2005	Commercial	emotionally specific drugs	8	Unknown	V - mental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	synthetic organs by printing layers of cells	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	synthetic viruses	10	Unknown	1-	Other

					infections	
BT Calendar 2005	Commercial	sensory augmentation using sensory implants, nanoparticles etc	10	Rehabilitation	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	use of stem cells in brain after strokes or accidents	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	gene therapy generates new hair cells in humans	10	Treatment and management of symptoms and disease	XII - skin	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	artificial sensors used in cosmetic upgrade surgery	13	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
BT Calendar 2005	Commercial	Electronic memory enhancement	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	Nanobots in toothpaste attack plaque	20	Health promotion and prevention of disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	Fully functioning artificial eyes	20	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	electronic brain implants	20	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Intelligence or memory enhancement by external means	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	e-baybies, genetic conception	20	Health promotion and prevention of disease	XXI - screening, rehab	Unknown
BT Calendar 2005	Commercial	synthetic immune system	20	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 2005	Commercial	Artificial peripheral nerves	30	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	e-baybies, digital emulation conception	30	Health promotion and prevention of disease	XXI - screening, rehab	Unknown

DT C-11 2005	6	El. al anata		C	Out.	IT1 1111 -
BT Calendar 2005	Commercial	Electronic	3	Supporting the	Other -	IT systems, eHealth
		prescriptions		provision of care	generic	and mHealth
		reduce fraud and		and/or increasing		
		improve speed		service efficiency		
BT Calendar 2005	Commercial	24/7 blood	3	Diagnosis and	Other -	Diagnostic tests
		chemistry		monitoring of	generic	and imaging
		monitoring		disease		
BT Calendar 2005	Commercial	supermarkets	3	Health promotion	Other -	Other
		used as major		and prevention of	generic	
		source of medical		disease		
		alerts				
BT Calendar 2005	Commercial	Expert systems	5	Supporting	Other -	IT systems, eHealth
Di Calcilladi 2005	Commercial	used extensively		patients receiving	generic	and mHealth
		in GP surgeries		care (designed to	generic	and miricaltii
		ill GP surgeries				
				be used by		
DT 0 1 1 2005	0 11	11 4 11 1	_	individuals)	0.1	.
BT Calendar 2005	Commercial	Hospitals use	5	Supporting the	Other -	IT systems, eHealth
		virtual queuing		provision of care	generic	and mHealth
	,	systems		and/or increasing		
				service efficiency		
BT Calendar 2005	Commercial	Neural networks	5	Supporting the	Other -	IT systems, eHealth
		used for patient		provision of care	generic	and mHealth
		appointment		and/or increasing		
		management		service efficiency		
BT Calendar 2005	Commercial	Multimedia	5	Supporting	Other -	IT systems, eHealth
		patient records		patients receiving	generic	and mHealth
				care (designed to	80	
				be used by		
				individuals)		
BT Calendar 2005	Commercial	Lifestyle	5	Health promotion	Other -	Population
Di Calendai 2003	Commercial	monitoring and	3	and prevention of		programmes
		_			generic	programmes
		insurance linked		disease		
DT Calanda 2005	6	to medical records	-	1111		D. '
BT Calendar 2005	Commercial	antibacterial	5	Health promotion	1-	Devices and
		coatings on		and prevention of	infections	biomaterials
		domestic		disease		
		appliances,				
		phones etc,				
		especially in				
		hospitals				
BT Calendar 2005	Commercial	flexible displays	5	Diagnosis and	Other -	IT systems, eHealth
		used for body		monitoring of	generic	and mHealth
		monitoring and		disease	-	
		alerts				
BT Calendar 2005	Commercial	emotion alerts	5	Health promotion	Other -	Devices and
55.564. 2555	30	2		and prevention of	generic	biomaterials
				disease	Bernerie	Diomacci idis
BT Calendar 2005	Commercial	(drug shortages	5	Diagnosis and	Other -	IT systems, eHealth
Di Calendai 2005	Commercial			_		and mHealth
		caused by)		monitoring of	generic	and medith
		internet diagnosis		disease		

BT Calendar 2005	Commercial	MRSA detection	5	Diagnosis and	1-	Population
		chips on sale in		monitoring of	infections	programmes
		high street		disease		
BT Calendar 2005	Commercial	Devices roaming	8	Unknown	Other -	Devices and
		within blood			generic	biomaterials
		vessels under own				
		power				
BT Calendar 2005	Commercial	Operations	8	Supporting	Other -	IT systems, eHealth
		videoed and		patients receiving	generic	and mHealth
		stored as part of		care (designed to		
		medical record		be used by		
DT Calandar 2005	Commonsial	Dinast alastuania	0	individuals)	\/	IT a set a sea a l l a a lt la
BT Calendar 2005	Commercial	Direct electronic	8	Other	V - mental health	IT systems, eHealth and mHealth
		pleasure production			nearth	and mhealth
BT Calendar 2005	Commercial	Orgasm by email	8	Supporting	XIV -	IT systems, eHealth
Bi Calendai 2003	Commercial	Orgasiii by eiliali	0	patients receiving	genitourina	and mHealth
				care (designed to	ry	and mireatin
				be used by	' '	
				individuals)		
BT Calendar 2005	Commercial	Artificial senses,	8	Rehabilitation	XXI -	Devices and
		sensors directly			screening,	biomaterials
		stimulating nerves			rehab	
BT Calendar 2005	Commercial	Smart membranes	8	Treatment and	Other -	Devices and
		for remote control		management of	generic	biomaterials
		of drug injection		symptoms and		
				disease		
BT Calendar 2005	Commercial	Domestic bacterial	8	Health promotion	1-	Diagnostic tests
		detection devices		and prevention of	infections	and imaging
DT Cala da 2005	6	NA' (I '-l'l-'	0	disease	Other i	D'accession to the state
BT Calendar 2005	Commercial	Micro-fluidic chips	8	Diagnosis and	Other -	Diagnostic tests
		used for gene sequencing in		monitoring of disease	generic	and imaging
		every GP surgery		uisease		
BT Calendar 2005	Commercial	Self certification	8	Supporting	Other -	IT systems, eHealth
2. 00.0.1001	30	for prescriptions		patients receiving	generic	and mHealth
		using electronic		care (designed to		
		diagnostics		be used by		
				individuals)		
BT Calendar 2005	Commercial	Visitor sanitising	8	Health promotion	1-	Organisational
		in hospitals		and prevention of	infections	programmes
				disease		
BT Calendar 2005	Commercial	Outpatients at	8	Supporting	Other -	IT systems, eHealth
		home - remote		patients receiving	generic	and mHealth
		tele-medical		care (designed to		
		consultations		be used by		
DT Call I 2005	6	1. 4	0	individuals)	Out	0
BT Calendar 2005	Commercial	Individual's	8	Supporting	Other -	Organisational
		genome part of		patients receiving	generic	programmes
		their medical		care (designed to		
	<u> </u>	record	l	be used by		

				individuals)		
BT Calendar 2005	Commercial	Portable	10	Health promotion	1-	Medical equipment
		bactericidal		and prevention of	infections	
		devices		disease		
BT Calendar 2005	Commercial	Bactericidal saws	10	Health promotion	- -	Devices and
		incorporated onto		and prevention of	infections	biomaterials
		materials in		disease		
BT Calendar 2005	Commercial	hospitals Robotic cleaners	10	Supporting the	Other -	Medical equipment
Bi Calellual 2005	Commercial	in hospitals	10	provision of care	generic	Medical equipment
		iii iiospitais		and/or increasing	generic	
				service efficiency		
Daar et al 2002	Research	Modified	8	Diagnosis and	1-	Diagnostic tests
Buul Ct ul 2002	Research	molecular		monitoring of	infections	and imaging
		technologies for		disease		
		affordable, simple				
		diagnosis of				
		infectious				
		diseases				
Daar et al 2002	Research	Recombinant	8	Health promotion	1-	Prophylactic
		technologies to		and prevention of	infections	vaccines
		develop vaccines	6	disease		
		against infectious				
		diseases				
Daar et al 2002	Research	Technologies for	8	Treatment and	Other -	Unknown
		more efficient		management of	generic	
		drug and vaccine		symptoms and		
		delivery systems		disease		
Daar et al 2002	Research	Technologies for	8	Health promotion	Other -	Unknown
		environmental		and prevention of	generic	
		improvement		disease		
		(sanitation, clean				
		water, bioremediation)				
Daar et al 2002	Research	Female-controlled	8	Health promotion	XIV -	Devices and
Dadi Ct di 2002	Research	protection against		and prevention of	genitourina	biomaterials
		sexually		disease	ry	biomaterials
		transmitted				
		diseases, both				
		with and without				
		contraceptive				
		effect				
Daar et al 2002	Research	Genetically	8	Health promotion	IV -	Unknown
		modified crops		and prevention of	endocrine	
		with increased		disease		
		nutrients to				
		counter specific				
		deficiencies				

Daar et al 2002	Research	Recombinant technology to make therapeutic products (for example, insulin, interferons) more affordable	8	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Karim2000	Policy planning	Telemedicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Medical databases	15	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Expert System in managed care and preventive medicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	diagnostic procedures (e.g. recombinant DNA techniques for parental screening)	15	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Karim2000	Policy planning	Therapeutic procedures (e.g. microsurgery and implanted muscle stimulators).	15	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Karim2000	Policy planning	Nanotechnology (e.g. devices which interact with tissues within the body to boost the immune system).	15	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Karim2000	Policy planning	Vaccines against infectious diseases	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of an AIDS vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of a TB vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Health promotion targeted at the youth	15	Health promotion and prevention of disease	Other - generic	Population programmes

Karim2000	Policy	Development of	15	Health promotion	Other -	Population
	planning	enriched and		and prevention of	generic	programmes
		fortified staple foods		disease		
Karim2000	Policy	Development of a	15	Health promotion	ļ -	Prophylactic
	planning	malaria vaccine		and prevention of	infections	vaccines
				disease		
Karim2000	Policy	Development of	15	Diagnosis and	Other -	Diagnostic tests
	planning	on-site diagnostic		monitoring of	generic	and imaging
	D. I.	tools	45	disease	200	
Karim2000	Policy	Development of	15	Health promotion	XXI -	drugs (not
	planning	female		and prevention of disease	screening, rehab	prophylactic
Karim2000	Policy	contraceptives Development of	15	Health promotion	I -	vaccines) Devices and
Kariiii2000	planning	barrier methods	15	and prevention of	infections	biomaterials
	platiting	and microbicides		disease	intections	Diomaterials
		for sexually		discuse		
		transmitted				
	•	diseases and HIV				
Karim2000	Policy	Development of	15	Treatment and	1-	drugs (not
	planning	malaria drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Development of	15	Treatment and	1 -	drugs (not
	planning	new TB drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Self management	15	Supporting	Other -	Organisational
	planning	tools for chronic		patients receiving	generic	programmes
		diseases (e.g. hypertension,		care (designed to be used by		
		diabetes,		individuals)		
		diarrhoea,		individuals)		
		psychiatric				
		conditions)				
Karim2000	Policy	Tissue	15	Treatment and	Other -	Regenerative
	planning	regeneration and		management of	generic	medicine
		gene therapy		symptoms and		
				disease		
Sbipy 1988	Research	Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
		antibodies will be		monitoring of	generic	and imaging
		used in:		disease		
		Histopathological				
Sbipy 1988	Research	techniques Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
201hA 1200	Nesedicii	antibodies will be	U	monitoring of	generic	and imaging
		used in:		disease	BCHELL	and imaging
		Biochemical		4.50450		
		techniques				
Sbipy 1988	Research	Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
' '		antibodies will be		monitoring of	generic	and imaging
		1		1		1 5 5

		used in: in-vivo		disease		
		diagnostic techniques				
Sbipy 1988	Research	Monoclonal antibodies will be	0	Diagnosis and monitoring of	II - cancers	Diagnostic tests
		used in:		disease		and imaging
		Identification and localization of				
		tumours				
Sbipy 1988	Research	Gene probes will	0	Diagnosis and	1-	Diagnostic tests
		be used in:		monitoring of	infections	and imaging
		diagnostic microbiology		disease		
Sbipy 1988	Research	Gene probes will	0	Diagnosis and	1-	Diagnostic tests
		be used in:		monitoring of	infections	and imaging
		diagnostic		disease		
		virology				
Sbipy 1988	Research	Gene probes will	0	Diagnosis and	Other -	Diagnostic tests
		be used in: To screen for		monitoring of disease	generic	and imaging
		potentially		uisease		
		deleterious				
		genes*				
Sbipy 1988	Research	Gene probes will	10	Diagnosis and	XVII -	Diagnostic tests
		be used in:		monitoring of	congenital	and imaging
		Diagnosing most		disease		
Sbipy 1988	Research	genetic disorders Genetic	10	Health promotion	Other -	Population
351PY 1300	Research	engineering will	10	and prevention of	generic	programmes
		enable the		disease		
		isolation of high				
		risk groups for				
al. 1000		common diseases			0.1	<u> </u>
Sbipy 1988	Research	Imaging	0	Diagnosis and monitoring of	Other -	Diagnostic tests
		techniques will be in widespread and		disease	generic	and imaging
		less hazardous use		discuse		
		including:				
		Ultrasound				
Sbipy 1988	Research	Imaging	0	Diagnosis and	Other -	Diagnostic tests
		techniques will be		monitoring of disease	generic	and imaging
		in widespread and less hazardous use		uisease		
		including: Doppler				
		measurement				
Sbipy 1988	Research	Imaging	0	Diagnosis and	Other -	Diagnostic tests
		techniques will be		monitoring of	generic	and imaging
		in widespread and		disease		
		less hazardous use				
		_				
		including: CT scanning				

Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: NMR scanning	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Nuclear medicine	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Positron detection*	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Three- dimensional dynamic imaging	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Drug therapy will be enhanced by: Genetic engineering	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug therapy will be enhanced by: Monoclonal antibodies used for drug targeting	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug delivery devices with or without in-vivo sensors	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Viral infections	0	Treatment and management of symptoms and disease	I - infections	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will be available for: Autoimmune diseases (monoclonal antibodies)	10	Treatment and management of symptoms and disease	III - blood	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will	0	Treatment and management of	IX - circulation	drugs (not prophylactic

		be available for: Heart failure (better drugs)		symptoms and disease		vaccines)
Sbipy 1988	Research	More effective Therapeutics will be available for: Obstructive arterial lesions (by removal and control of platelets and synthetic vascular prostheses)	10	Treatment and management of symptoms and disease	IX - circulation	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Cancer (hyperthermia, growth regulation factors and monoclonal antibodies)	10	Other	II - cancers	Other
Sbipy 1988	Research	Cardiac arrhythmias (implantable mechanisms)	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Arthritic joints (more biocompatible prosthetic materials and a wider range of joint replacements)	0	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Incontinence (stimulation via implantable electrodes)	0	treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Disability (wider range of flow technology aids and biological servomechanisms linked to computers and	0	Rehabilitation	Other - generic	Other

		robotics)				
Sbipy 1988	Research	More effective Therapeutics will be available for: Limb damage (permanent internal bone repair)	0	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Tropical parasitic diseases (vaccines)	0	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Sbipy 1988	Research	More effective Therapeutics will be available for: Mental disorders (neurotransmitter s)	10	Treatment and management of symptoms and disease	V - mental health	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Laser microsurgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser endoscopic surgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser angioplasty and angiography	0	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Sbipy 1988	Research	Other laser and endoscopic surgical techniques	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Cryosurgery	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Lithotripsy	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Transplantation will be enhanced by better techniques	0	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials

		1.12				
		enabling long				
		term in-vitro				
		organ				
		preservation and				
		the prevention of				
		rejection				
Sbipy 1988	Research	Bone marrow	0	Treatment and	III - blood	Regenerative
		transplantation		management of		medicine
		with purified stem		symptoms and		
		cells and		disease		
		autologous				
		material will be				
		available				
Sbipy 1988	Research	A safe male pill for	10	Health promotion	XXI -	drugs (not
		long-term use will		and prevention of	screening,	prophylactic
		be available		disease	rehab	vaccines)
Sbipy 1988	Research	Improved	0	Diagnosis and	XIV -	Diagnostic tests
		techniques for		monitoring of	genitourina	and imaging
		detecting		disease	ry	
		ovulation will				
		enhance natural				
		family planning*				
Sbipy 1988	Research	Optical disc	0	Supporting the	Other -	Diagnostic tests
',		storage and		provision of care	generic	and imaging
		communication		and/or increasing		
		will be used with		service efficiency		
		X-rays and other		,		
		diagnostic images				
Sbipy 1988	Research	Computers will be	10	Supporting the	Other -	IT systems, eHealth
. ,		used by clinical		provision of care	generic	and mHealth
		departments for		and/or increasing		
		data collection		service efficiency		
Sbipy 1988	Research	Expert	0	Supporting the	Other -	IT systems, eHealth
, sarp, 2000		interrogation will		provision of care	generic	and mHealth
		be possible due to		and/or increasing	goment	
		data		service efficiency		
		centralization				
Sbipy 1988	Research	Patient	10	Supporting	Other -	IT systems, eHealth
35.5, 1550		interviewing		patients receiving	generic	and mHealth
		systems will be		care (designed to	37 5.15	
		available in the		be used by		
		surgery and in		individuals)		
		patients' homes				
Sbipy 1988	Research	Expert systems	10	Supporting	Other -	IT systems, eHealth
23.57 1300		will enable	-	patients receiving	generic	and mHealth
		diagnosis and		care (designed to	Beriefic	and initialiti
		define the most		be used by		
		applicable		individuals)		
		treatment		mulviduais)		
		i catillellt				

Sbipy 1988	Research	Linkage of computerized patient data will be available between all hospital, community and primary care services and settings	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Life style changing behaviours	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Screening for phenylketonuria	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Screening for congenital hypothyroidism	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Blood pressure can be checked by self-service meters	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	High serum cholesterol can be checked by fingerprick blood test	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	Certain cancer tests can be self- administered	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Improved diagnostic tests may be available for widespread use for screening at the community level	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Improved vaccine against cholera in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New malaria vaccine in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against hepatitus B	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines

STG 1988	Policy	New vaccine	N/A	Health promotion	-	Prophylactic
310 1300	planning	against	IN/ A	and prevention of	infections	vaccines
	pianing	respiratory		disease	Intections	Vaccines
		syncytial virus		discuse		
STG 1988	Policy	New vaccine	N/A	Health promotion	1-	Prophylactic
	planning	against influenza		and prevention of	infections	vaccines
				disease		
STG 1988	Policy	New vaccine	N/A	Health promotion	1 -	Prophylactic
	planning	against AIDS		and prevention of	infections	vaccines
				disease		
STG 1988	Policy	New vaccine	N/A	Health promotion	I -	Prophylactic
	planning	against		and prevention of	infections	vaccines
		cytomegalovirus		disease		
STG 1988	Policy	Better vaccine	N/A	Health promotion	1-	Prophylactic
	planning	against Perussis		and prevention of	infections	vaccines
	2.11			disease		
STG 1988	Policy	Oral	N/A	Health promotion	- :f:	Prophylactic
	planning	administration or		and prevention of	infections	vaccines
		administartion by		disease		
		nasal spray will facilitate mass				
		immunization				
STG 1988	Policy	Creating vaccines	N/A	Health promotion	-	Prophylactic
310 1900	planning	containing	IN/A	and prevention of	infections	vaccines
	planning	antigens for		disease	IIIICCCIOIIS	Vaccines
		several organisms		discuse		
		given together				
		(e.g. DPTPM)				
STG 1988	Policy	Shifts in diet	N/A	Health promotion	Other -	Population
	planning	toward lower		and prevention of	generic	programmes
		intake of fat		disease		
		especially				
		saturated fat				
STG 1988	Policy	Reliable and	N/A	Diagnosis and	IX -	Diagnostic tests
	planning	simple test for		monitoring of	circulation	and imaging
		cholesterol		disease		
STG 1988	Policy	More effective	N/A	Health promotion	IX -	drugs (not
	planning	and safer drugs		and prevention of	circulation	prophylactic
		for treatment of		disease		vaccines)
		elevated				
CTC 4000	Dell's	cholesterol	N1/A	Comments	Other	Diametrical
STG 1988	Policy	Technologies for	N/A	Supporting	Other -	Diagnostic tests
	planning	home use without professional		patients receiving	generic	and imaging
		supervision (e.g.		care (designed to be used by		
		home diagnostic		individuals)		
		kits)		individuals)		
STG 1988	Policy	Disease conditions	N/A	Supporting	Other -	IT systems, eHealth
310 1300	planning	will be monitored	18/7	patients receiving	generic	and mHealth
	Pidililis	from distant		care (designed to	Benefic	and inficulti
		professional sites		be used by		
		Professional sites	<u> </u>	ac asca by	<u> </u>	

				individuals)		
				,		
STG 1988	Policy planning	Robotics will be used for mobility and assistance at home such as nutrition and cleaning	N/A	Rehabilitation	Other - generic	Assistive devices
STG 1988	Policy planning	Regeneration of central nervous system through the use of nerve growth factors or transplant neurotransmitter-producing cells into the brain	N/A	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
STG 1988	Policy planning	Grafting of the spinal cord or the peripheral nervous system	N/A	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
STG 1988	Policy planning	More safer & effective contraception	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Contraceptive vaccine	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Prophylactic vaccines
STG 1988	Policy planning	Alternatives to surgical abortion such as combination of antiprogestins and prostaglandins	N/A	Treatment and management of symptoms and disease	XV - pregnancy	drugs (not prophylactic vaccines)
STG 1988	Policy planning	Treatment of infertility using new technologies such as in vitro fertilization, surrogate motherhood, freezing of germ cells and embro with embryo transfer	N/A	Treatment and management of symptoms and disease	XIV - genitourina ry	Other
STG 1988	Policy planning	Fetal cells can be isolated from the mother's bloodstream as a method for prenatal screening	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Diagnostic tests and imaging

STG 1988	Policy	Metabolic,	N/A	Diagnosis and	Other -	Diagnostic tests
	planning	physiologic information can be obtained by		monitoring of disease	generic	and imaging
		spectroscopy				
STG 1988	Policy planning	Data from CT scanner will be stored on a disk, transmit by a phone line or othe communication	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy	Film may	N/A	Supporting	Other -	Diagnostic tests
310 1988	planning	disappear and computer will directly interpret the diagnosis	IN/A	patients receiving care (designed to be used by individuals)	generic	and imaging
STG 1988	Policy	Biosensors to	N/A	Diagnosis and	Other -	Diagnostic tests
	planning	monitor disease condition or results of therapy (e.g. diabetes)	,	monitoring of disease	generic	and imaging
STG 1988	Policy planning	Tumor markers that can be measured in blood	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Flow cytometer will be used in transplantation or monitoring of cancer therapy	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Monoclonal antibodies for diagnosis such as colon cancer and area of cardiac infarctions	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Human gene therapy for a wide variety of diseases including cancer, diabetes, cardiovascular and affective disorders such as depression	N/A	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
STG 1988	Policy planning	DNA probe for intra-uterine diagnosis of genetic diseases	N/A	Diagnosis and monitoring of disease	XVII - congenital	Diagnostic tests and imaging
STG 1988	Policy	Home diagnostic	7	Diagnosis and	1-	Organisational
	planning	kits for sexually		monitoring of	infections	programmes

		transmitted diseases and hepatitits		disease		
STG 1988	Policy planning	Home diagnostic kits for screening for cancer	7	Diagnosis and monitoring of disease	I - infections	Organisational programmes
STG 1988	Policy planning	Home diagnostic kits to test for common diseases with genetic basis such as diabetes	N/A	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
STG 1988	Policy planning	Genetic insertion therapy for treatment of certain blood disorders such as thalassaemia and sickle cell anaemia	N/A	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
STG 1988	Policy planning	Oral treatment forms for hormones, enzymes and other peptides may be developed	N/A	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for asthma	N/A	Treatment and management of symptoms and disease	X - respiratory	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for coronary artery diseases	N/A	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Monoclonal antibodies to replace immune globulins	N/A	Treatment and management of symptoms and disease	III - blood	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Cloning of skin	N/A	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
STG 1988	Policy planning	Growth of retinal tissue and corneal endothelium	N/A	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
STG 1988	Policy planning	Total body irradiation for transplant (to prevent rejection)	N/A	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
STG 1988	Policy planning	Artificial heart	N/A	Treatment and management of symptoms and	IX - circulation	Regenerative medicine

				disease		
STG 1988	Policy planning	Artificial pancreas	N/A	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
STG 1988	Policy planning	Shoulder joint replacement	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Cochlear implants	N/A	Treatment and management of symptoms and disease	VIII - ear	Devices and biomaterials
STG 1988	Policy planning	Coating of implant materials to improve acceptability	N/A	Other	Other - generic	Devices and biomaterials
STG 1988	Policy planning	Functional electrical stimulation in prosthetics allowing brain to control the action	N/A	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
STG 1988	Policy planning	Prostheic fingers	N/A	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Organ transplant and improvement of functional activities of organs (pancreas, bone, small bowel, endocine glands)	N/A	Treatment and management of symptoms and disease	Other - generic	Other
STG 1988	Policy planning	Microprocessor to restore damaged areas of the brain	N/A	Rehabilitation	VI - nervous	Devices and biomaterials
STG 1988	Policy planning	Laser cytofluorometry will be used to identify RNA and DNA in the plasma	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser doppler to measure blood flow in the retina	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser to stop gastrointestinal bleeding	N/A	Treatment and management of symptoms and disease	XI - GI tract, dental health	Therapeutic procedures

STG 1988	Policy planning	Laser to break urinary stones	N/A	Treatment and management of symptoms and	XIV - genitourina ry	Therapeutic procedures
STG 1988	Policy planning	Laser surgery through endoscope	N/A	disease Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
STG 1988	Policy planning	Widespread use of microsurgery	N/A	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
STG 1988	Policy planning	Electronic gas valve regulator for safety in anaesthaesia	N/A	Supporting the provision of care and/or increasing service efficiency	XIX - injury	Medical equipment
STG 1988	Policy planning	Instantaneous measurement of blood gases and drug levels in the body during anasthaesia	N/A	Supporting patients receiving care (designed to be used by individuals)	XIX - injury	Diagnostic tests and imaging
STG 1988	Policy planning	Computerised ECG operating room	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Data on each patient available at any moment during the operation	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Computerised electroanaesthesi a	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	New methods to close wounds e.g. tissue glue with ultrasound	N/A	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
STG 1988	Policy planning	Spectroscopy using optical methods to diagnose caries	N/A	Diagnosis and monitoring of disease	XI - GI tract, dental health	Diagnostic tests and imaging
STG 1988	Policy planning	Bone like implants for teeth and bones	N/A	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
STG 1988	Policy planning	Home monitoring especially of the elderly	N/A	Supporting patients receiving care (designed to	Other - generic	IT systems, eHealth and mHealth

				be used by individuals)		
STG 1988	Policy planning	Networks for communications between and within hospitals	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Huge mass memories (e.g. on laser disc) for the storage of medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Video disk oriented data base for medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Computer aided examination and testing	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Improved biomaterials for joint implants and plastic surgery	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Improved materials for artificial blood vessels	N/A	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Cahill et al Technology Map 1999	policy planning	Therapeutics for arterial occlusion and myocardial infarction	4	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	Policy planning	Guidelines for adult disease preventing life style	8	Supporting the provision of care and/or increasing service efficiency	XXI - screening, rehab	Organisational programmes
Cahill et al Technology Map 1999	policy planning	Development of anti-cancer agents (gene level)	11	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999 Cahill et al	policy planning policy	drugs preventing the occurrence of cancer Effective means to	12	Health promotion and prevention of disease Health promotion	II - cancers II - cancers	Drugs (not prophylactic vaccines) Unknown
Technology Map 1999	planning	prevent metastasis		and prevention of disease		
Cahill et al Technology Map 1999	policy planning	Genetic/biochemi cal tests for schizophrenia and depression	9	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging

Food and Drug Administration (FDA) surveys 1998	Policy planning	Biosensors	10	Unknown	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser diagnosis	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Tissue engineered devices	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Blood vessel prosthetics	10	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Bone prosthetics/ growth	10	Treatment and management of symptoms and disease	XIII - musculoske letal	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Cardiac stimulation	10	Treatment and management of symptoms and disease	IX - circulation	Unknown
Food and Drug Administration (FDA) surveys 1998	Policy planning	cartilage prosthetics	10	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Computer aided clinical labs	10	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Computer aided diagnosis	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Telemedicine	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Drug impregnated devices	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Endoscopy	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration	Policy planning	Hearing aids/Nonimplante	10	Rehabilitation	VIII - ear	Devices and biomaterials

(FDA) surveys 1998		d sensory aids				
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart valves	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart pumps	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Home diagnostics /Home/self monitoring & diagnosis	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Organisational programmes
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image contrast agents	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Integrated patient medical info systems	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser treatment	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	kidney prosthetics	10	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser surgery	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Liver prosthetics	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive neurosurgery	10	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive cardiac surgery	10	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	MRI	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Food and Drug	Policy	Neuromuscular	10	Treatment and	Other -	Non-surgical
Administration	planning	stimulation	10	management of	generic	therapy
(FDA) surveys	piariring	Stilliulation		symptoms and	generic	шетару
1998				disease		
	Policy	Nerve	10	Treatment and	VI -	Dogonorativo
Food and Drug	-		10			Regenerative
Administration	planning	regeneration		management of	nervous	medicine
(FDA) surveys				symptoms and		
1998	Dallar	Name ation dation	10	disease	VI -	Nan aussiaal
Food and Drug	Policy	Neural stimulation	10	Treatment and		Non-surgical
Administration	planning			management of	nervous	therapy
(FDA) surveys 1998				symptoms and disease		
	Delieu	Ocular prosthatics	10		\/II	Davissa and
Food and Drug	Policy	Ocular prosthetics	10	Treatment and	VII - eye	Devices and
Administration	planning			management of		biomaterials
(FDA) surveys				symptoms and		
1998	Delieu	Domoroos	10	disease	1)/	Dogonoustine
Food and Drug	Policy	Pancreas	10	Treatment and	IV -	Regenerative
Administration	planning	prosthetics		management of	endocrine	medicine
(FDA) surveys				symptoms and		
1998	Dalla	Dationt sweet	10	disease	Other	IT as a to a second
Food and Drug	Policy	Patient smart	10	Supporting	Other -	IT systems, eHealth
Administration	planning	cards		patients receiving	generic	and mHealth
(FDA) surveys				care (designed to		
1998			5	be used by		
Food and Door	D-II-	Dalastia a second	10	individuals)	Other i	The second of
Food and Drug	Policy	Robotic surgery	10	Treatment and	Other -	Therapeutic
Administration	planning			management of	generic	procedures
(FDA) surveys 1998				symptoms and disease		
Food and Drug	Policy	Skin prosthetics	10	Treatment and	XII - skin	Regenerative
Administration	-	Skill prostiletics	10		AII - SKIII	medicine
	planning			management of		medicine
(FDA) surveys 1998				symptoms and disease		
Food and Drug	Policy	Telemedicine-	10	Supporting	Other -	IT systems, eHealth
Administration	planning	home use	10	patients receiving		and mHealth
(FDA) surveys	piariring	nome use		care (designed to	generic	and minearm
1998				be used by		
1990				individuals)		
Food and Drug	Policy	Telemedicine-	10	Supporting	Other -	IT systems, eHealth
Administration	planning	radiology	10	patients receiving	generic	and mHealth
(FDA) surveys	Pidililig	Tadiology		care (designed to	SCHOOL	and mireditii
1998				be used by		
				individuals)		
Food and Drug	Policy	Robotic surgical	0	Treatment and	Other -	Therapeutic
Administration	planning	systems		management of	generic	procedures
(FDA) surveys	, s	3,3003		symptoms and	00110110	p. 000 a
2008				disease		
Food and Drug	Policy	Point-of-care	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning	products		monitoring of	generic	and imaging
(FDA) surveys	P	F. 00000		disease	30	o'''o
1998						
	1	1	I	İ	1	1

Food and Drug Administration (FDA) surveys 1998	Policy planning	Computer- assisted diagnostic systems	10	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Neuro-sensory devices	10	Diagnosis and monitoring of disease	VI - nervous	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Optical diagnostic products	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Integrated electronic patient medical records	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Remote patient monitoring systems	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Glucose monitoring products	10	Diagnosis and monitoring of disease	IV - endocrine	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Tissue engineered products	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced prosthetic limbs	10	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Minimally invasive implants (e.g., percutaneous or natural orifice delivery)	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Virtual reality systems for immersive training and other applications	10	Unknown	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Optical therapeutic devices	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Internet-based medical device systems	10	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
Food and Drug Administration (FDA) surveys 1998	Policy planning	New (non-eluting) drug delivery systems	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Food and Drug Administration (FDA) surveys 1998	Policy planning	Robotic prosthetics	20	Rehabilitation	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of insulin pumps and delivery systems	20	Treatment and management of symptoms and disease	IV - endocrine	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of stents	20	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Joint replacements	20	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image-guided therapy systems	20	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced ultrasound imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced optical imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced MR imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Minimally invasive radiotherapy systems	20	Treatment and management of symptoms and disease	II - cancers	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Genetic diagnostic products	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Remote patient monitoring systems	20	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
Institute of the Future, 2009	Research	Bio-marker based tools will screen for future disease risk and produce new diagnoses	11	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	based on probabilities Visualizations improve diet & exercise	11	Health promotion and prevention of disease	Other - generic	Non-surgical therapy
Institute of the Future, 2009	Research	GPS-enabled asthma inhalers	11	Supporting the provision of care and/or increasing service efficiency	X - respiratory	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Workplace clinics	11	Health promotion and prevention of disease	Other - generic	Organisational programmes
Institute of the Future, 2009	Research	Urban planning for walkability, pollution reduction, neighbourood food systems	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Report cards include Body Mass Index (BMI) scores	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	iPhone-synched medical devices	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Quantifying, visualizing, and mapping health implications of environments	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Deep brain stimulation used for neurological, behavioral issues	11	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
Institute of the Future, 2009	Research	Home sensors for elder care	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Individually targeted therapies	11	Treatment and management of symptoms and	Other - generic	Drugs (not prophylactic vaccines)

				disease		
Institute of the Future, 2009	Research	Sensors track drug efficacy	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Institute of the Future, 2009	Research	Genotypic diagnostics and risk	11	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	New technologies enable individuals to experience the future effects of present-day behavior choices	11	Treatment and management of symptoms and disease	Other - generic	Unknown
Institute of the Future, 2009	Research	Regenerative medicine (general)will replace, restore, maintain, or enhance tissue and organ functions	11	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Institute of the Future, 2009	Research	New ways of reliably measuring subjective states such as happiness, anxiety, or pain, and finding the neural correlates of personality and behavioral patterns	11	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
Institute of the Future, 2009	Research	prototype of a prosthetic arm that can be controlled naturally and provide sensory feedback.	11	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
Stevens et al 1997	Research	Magnetic resonance imaging	1	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Minimally invasive surgery	1	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Stevens et al 1997	Research	drugs for Therapeutic refractory	1	Treatment and management of symptoms and	V - mental health	Drugs (not prophylactic vaccines)

		schizphrenia		disease		
Stevens et al 1997	Research	Implantable vascular stents	1	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Stevens et al 1997	Research	Peripheral blood stem cells transplantation	1	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Laser Therapeutic of benign prostatic hyperplasia	1	Treatment and management of symptoms and disease	XIV - genitourina ry	Non-surgical therapy
Stevens et al 1997	Research	Gene therapy advances	4	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Polymerase chain reaction	4	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Telemedicine	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Interventional radiology	1	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Stevens et al 1997	Research	Angioplasty	1	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Stevens et al 1997	Research	Interferon for chronic granulocytic leukemia	1	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Interferon for hepatitis C	1	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Lasers for dermatology	1	Treatment and management of symptoms and disease	XII - skin	Devices and biomaterials
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

Stevens et al	Research	Near patient	2	Diagnosis and	Other -	Diagnostic tests
1997		testing		monitoring of	generic	and imaging
				disease		
Stevens et al	Research	Revision of joint	1	Treatment and	XIII -	Therapeutic
1997		replacement		management of	musculoske	procedures
				symptoms and	letal	
				disease		
Stevens et al	Research	Genetic screening	4	Diagnosis and	Other -	Diagnostic tests
1997				monitoring of	generic	and imaging
				disease		
Stevens et al	Research	Helicobactor	1	Treatment and	1-	Drugs (not
1997		pylori eradication		management of	infections	prophylactic
				symptoms and		vaccines)
Clarate at al	December	D '1 ' ' '		disease	Other	D'acception and
Stevens et al	Research	Positron emission	4	Diagnosis and	Other -	Diagnostic tests
1997		tomography		monitoring of	generic	and imaging
Stovens at al	Research	Phacoemulsificati	1	disease Treatment and	VIII our	Thoranguetic
Stevens et al 1997	Research		1		VII - eye	Therapeutic procedures
1997		on		management of symptoms and		procedures
				disease		
Stevens et al	Research	Cochlear implants	1	Rehabilitation	VIII - ear	Devices and
1997	Nesearch	Cocilical implants	1	Kenabilitation	VIII - Eai	biomaterials
Stevens et al	Research	Paclitaxels for	2	Treatment and	II - cancers	Drugs (not
1997		ovarian & breast		management of		prophylactic
		cancer		symptoms and		vaccines)
				disease		13.5555,
Stevens et al	Research	Bone	1	Diagnosis and	XIII -	Diagnostic tests
1997		densitometry		monitoring of	musculoske	and imaging
		screening		disease	letal	
Stevens et al	Research	Anticoagulants for	1	Health promotion	IX -	Drugs (not
1997		atrial fibrillation		and prevention of	circulation	prophylactic
				disease		vaccines)
Stevens et al	Research	Picture archiving	4	Supporting the	Other -	IT systems, eHealth
1997		and		provision of care	generic	and mHealth
		communication		and/or increasing		
		system		service efficiency		
Stevens et al	Research	rhDNase	2	Treatment and	IV -	Drugs (not
1997				management of	endocrine	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Biomaterials in	2	Treatment and	XIII -	Devices and
1997		bone and joint		management of	musculoske	biomaterials
		replacement		symptoms and	letal	
				disease		
Stevens et al	Research	Increased use of	2	Treatment and	II - cancers	Drugs (not
1997		adjuvant		management of		prophylactic
		chemotherapy in		symptoms and		vaccines)
<u> </u>		colorectal cancer	-	disease		5 / :
Stevens et al	Research	Increased use of	2	Treatment and	III - blood	Drugs (not
1997		high purity factor		management of		prophylactic

		VIII and recombinant factor VIII in hemophilia		symptoms and disease		vaccines)
Stevens et al 1997	Research	Mirena intrauterine contraceptive device	2	Health promotion and prevention of disease	XIV - genitourina ry	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	drugs for Alzheimer's disease	6	Treatment and management of symptoms and disease	V - mental health	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Xenotransplantati on	6	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Screening for abdominal aortic aneurysm	6	Health promotion and prevention of disease	IX - circulation	Population programmes
Stevens et al 1997	Research	Remotely controlled robots (laboratory)	6	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Stevens et al 1997	Research	Gene therapy for cystic fibrosis	6	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
Stevens et al 1997	Research	New anesthetic vapors	2	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Magnetic resonance angiography	4	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
Stevens et al 1997	Research	Digital radiography	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Alendronate for osteoporosis	2	Treatment and management of symptoms and disease	XIII - musculoske letal	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Continuous positive airways pressure	1	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy

Stoyons et al	Docoarch	Evnanding motal	1	Treatment and	II cancers	Dovices and
Stevens et al 1997	Research	Expanding metal stents for	1	Treatment and	II - cancers	Devices and biomaterials
133/				management of		DIOIIIALEIIAIS
		esophageal cancer		symptoms and disease		
Ctovors at al	Docco rol-	Comminitie	1		\/ pa a m + = 1	Organisational
Stevens et al	Research	Community	1	Supporting	V - mental	Organisational
1997		placements for		patients receiving	health	programmes
		severe mental		care (designed to		
		illness		be used by		
C	5 1	EL 1 1		individuals)		5 / .
Stevens et al	Research	Fludarabine in	2	Treatment and	II - cancers	Drugs (not
1997		lymphomas and		management of		prophylactic
		chronic leukemias		symptoms and		vaccines)
				disease		
Stevens et al	Research	Combined therapy	2	Treatment and	I -	Drugs (not
1997		for HIV/AIDS		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Epilepsy surgery	1	Treatment and	VI -	Therapeutic
1997				management of	nervous	procedures
				symptoms and		
				disease		
Stevens et al	Research	Lipid-lowering	1	Health promotion	IX -	Drugs (not
1997		drugs for elevated		and prevention of	circulation	prophylactic
		cholesterol		disease		vaccines)
Stevens et al	Research	Repair of	4	Treatment and	IX -	Devices and
1997		abdominal aortic		management of	circulation	biomaterials
		aneurysm with		symptoms and		
		transfemoral		disease		
		endovasculate				
		(bifurcated) graft				
Stevens et al	Research	Intracytoplasmatic	2	Treatment and	XIV -	Therapeutic
1997		sperm injection		management of	genitourina	procedures
		, , , , , , , , , , , , , , , , , , , ,		symptoms and	ry	,
				disease	,	
Stevens et al	Research	Computed	2	Diagnosis and	Other -	Diagnostic tests
1997		tomography (CT)	-	monitoring of	generic	and imaging
		scan advances		disease	00110110	~a
Stevens et al	Research	Voice activated	1	Supporting the	Other -	Organisational
1997	Research	dictation	_	provision of care	generic	programmes
1337		technology		and/or increasing	Schene	programmes
		Comology		service efficiency		
Stevens et al	Research	Intra-arterial	1	Treatment and	IX -	Devices and
1997	Nescarcii	metallic stents	_			biomaterials
1337		metanic stents		management of	circulation	טוטווומנפוומוט
				symptoms and		
Tagadalar 100	Dalian	Handle ald orbert	1.4	disease	Other	Diamontic to the
Tremblay and Yiu,	Policy	Hand-held robotic	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	and remote		monitoring of	generic	and imaging
		ultrasound		disease		
Tremblay and Yiu,	Policy	MRI guided	14	Diagnosis and	IX -	Diagnostic tests
2006	planning	catheterization		monitoring of	circulation	and imaging
				disease		

Tremblay and Yiu, 2006	Policy planning	Image-guided therapy and	14	Treatment and management of	Other - generic	Therapeutic procedures
		surgery and robotics		symptoms and disease		
Tremblay and Yiu, 2006	Policy planning	Computed Tomographic Colonography	14	Diagnosis and monitoring of disease	XI - GI tract, dental health	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Digital Tomosynthesis	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Molecular-level imaging	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	More economical scanners with improved image processing	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Tremblay and Yiu, 2006	Policy planning	4D imaging	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Faster cycle time to capture an image and general reduction in scan times	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Tremblay and Yiu, 2006	Policy planning	Hybrid PET/CT increasingly replacing invasive procedures	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Stereotactic radio- surgery for early detection of coronary heart diseases	14	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Magnetic Resonance Guided Focused Ultrasound for Imaging of inflammation	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Wireless home- health monitoring	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	E-health diagnostic platform	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Hand-held gamma camera	14	Diagnosis and monitoring of	Other - generic	Diagnostic tests and imaging

				disease		
Tremblay and Yiu, 2006	Policy planning	"one-stop" diagnosis and Therapeutic	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	customised hybrid systems for specific clinical situations	14	Unknown	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	Near Infra-red Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Spatially-resolved Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Optical Coherence Tomography	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Capsule Endoscopy	14	Diagnosis and monitoring of disease	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Tele-echography	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Tele-colposcopy	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Electronic Nose	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	New contrast agents for Rubidium	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised gases	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Terahertz waves	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Microwaves, light spectrum	14	Unknown	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised imaging	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Specific advances in MRI, Ultrasound, Radiographyetc	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Tremblay and Yiu, 2006	Policy planning	Reduction in use of invasive diagnostic procedures	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	Diagnosis of kidney disorders without renal biopsy	14	Diagnosis and monitoring of disease	XIV - genitourina ry	Unknown
Tremblay and Yiu, 2006	Policy planning	Ex vivo molecular- computer diagnosis	14	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Smart-drug delivery systems	14	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Polymer- encapsulated, bioconjugated quantum dots	9	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Patient accessed universal health records	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	In silico-in vivo integration (lab on-a-chip)	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Wide deployment of non-invasive technologies and biosensors	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Direct consumer access to diagnostic tests	6	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	Molecular imaging with single molecular pecision	9	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	diagnostic testing throughout the care pathway	7	Supporting the provision of care and/or increasing service efficiency	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Neuro-imaging at cellular level of brain processes (thoughts)	14	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Molecular- computers used to design smart therapies	14	Other	Other - generic	Drugs (not prophylactic vaccines)

Tremblay and Yiu,	Policy	Remote internet	9	Supporting	Other -	IT systems, eHealth
2006	planning	diagnosis based		patients receiving	generic	and mHealth
		on data received		care (designed to		
		from patient's		be used by		
		home		individuals)		
Tremblay and Yiu,	Policy	Molecular	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	diagnosis		monitoring of disease	generic	and imaging
Tremblay and Yiu,	Policy	diagnostic -guided	14	Treatment and	Other -	Drugs (not
2006	planning	therapy for		management of	generic	prophylactic
		individualised		symptoms and		vaccines)
		medicine		disease		
Tremblay and Yiu,	Policy	Computer-	14	Diagnosis and	Other -	IT systems, eHealth
2006	planning	assisted diagnosis		monitoring of	generic	and mHealth
		with pattern		disease		
		recognition				
Tremblay and Yiu,	Policy	Self-propelled	9	Unknown	Other -	Devices and
2006	planning	micro-machines			generic	biomaterials
		for diagnosis and				
		Therapeutic				
Tremblay and Yiu,	Policy	diagnostic bio-	9	Diagnosis and	II - cancers	Diagnostic tests
2006	planning	chip for cancer		monitoring of		and imaging
				disease		
Tremblay and Yiu,	Policy	Investigation of	14	Diagnosis and	IX -	Devices and
2006	planning	thrombosis and		monitoring of	circulation	biomaterials
		vascular		disease		
		pathology using				
		3D tomography				
		with remote				
		controlled micro-				
		instruments				
Tremblay and Yiu,	Policy	Personal care	12	Supporting	Other -	Medical equipment
2006	planning	nurse-robots		patients receiving	generic	
				care (designed to		
				be used by		
				individuals)		
Tremblay and Yiu,	Policy	Functional	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	combination of		monitoring of	generic	and imaging
		targeting and		disease		
		imaging				
Tremblay and Yiu,	Policy	Intelligent and	14	Supporting the	Other -	Organisational
2006	planning	context sensitive		provision of care	generic	programmes
		clinical systems		and/or increasing		
				service efficiency		
Tremblay and Yiu,	Policy	Personal access to	14	Supporting	Other -	Unknown
2006	planning	genomic		patients receiving	generic	
		information		care (designed to		
				be used by		
				individuals)		
Tremblay and Yiu,	Policy	Development of	9	Treatment and	Other -	Regenerative
•	planning	effective gene		management of	generic	medicine

		therapies		symptoms and disease		
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of scientific guidelines for adult-disease-preventing lifestyles (nutrition, rest and exercise)	9	Health promotion and prevention of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of chemotherapy that brings complete remission to digestive organ cancer with low drug-responsiveness	18	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of techniques to overcome the drug resistance of malignant tumours	16	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of drugs that cure viral liver disease	13	Treatment and management of symptoms and disease	XI - GI tract, dental health	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of biological and immunological therapy effective for cancer	14	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective methods of preventing Alzheimer's disease	16	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Possible to cure allergic diseases	21	Treatment and management of symptoms and disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an HIV vaccine	10	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of gene therapy against malignant tumors	17	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

Science & Technology Foresight survey Japan 1997 Science & Technology	Policy planning Policy planning	Widespread use of prevention methods for the contraction of diabetic complications Practical use of anti-AIDS therapy	11	Health promotion and prevention of disease Treatment and management of	IV - endocrine I - infections	Unknown Drugs (not prophylactic
Foresight survey Japan 1997				symptoms and disease		vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of an early cancer diagnosis technique based on biochemical examination	10	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to eliminate viruses from blood	12	Treatment and management of symptoms and disease	I - infections	Therapeutic procedures
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of prevention methods for stress-induced mental disorders	14	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a method to quantitatively assess the level of aging (biological age) in relation to chronological age.	9	Diagnosis and monitoring of disease	Other - generic	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a preventive measure against diabetic complications.	14	Health promotion and prevention of disease	IV - endocrine	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of presbyopia prevention methods	29	Health promotion and prevention of disease	VII - eye	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a laser-applied tooth decay treatment method	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread method of prevention against a premature delivery through	8	Health promotion and prevention of disease	XV - pregnancy	Organisational programmes

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	based on				
Policy	Practical use of	9	Diagnosis and	IX -	Diagnostic tests
planning	diagnosing		monitoring of	circulation	and imaging
	methods for		disease		
	determining the				
	level and spread				
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		planning the prevention against congenital anomaly originating in the embryonic or fetal period. Policy Widespread use of preventive measure for cerebral palsy Policy planning of a cancer spread diagnosis technique based on 3-D imaging. Policy Widespread use of a cancer risk assessment technique based on genetic analysis. Policy Widespread use of against of cancer cells drug sensitivity measurement method. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy Practical use of classification and stage determination of schizophrenia based on diagnostic imaging. Policy planning Policy Practical use of diagnostic imaging. Policy planning diagnosing methods for determining the	management system of fetal information. Policy planning management system of fetal information. Policy planning the prevention against congenital anomaly originating in the embryonic or fetal period. Policy planning of preventive measure for cerebral palsy Policy planning of a cancer spread diagnosis technique based on 3-D imaging. Policy planning of a cancer risk assessment technique based on genetic analysis. Policy planning of against of cancer cells drug sensitivity measurement method. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning of automatic testing equipment for cancer cytodiagnosis. Policy planning diagnostic imaging. Policy planning of diagnostic imaging. Policy planning diagnostic imaging. Policy planning diagnostic imaging. Policy planning diagnosting methods for determining the	management system of fetal information. Policy planning the prevention against congenital anomaly originating in the embryonic or fetal period. Policy planning of preventive measure for cerebral palsy Policy planning of a cancer spread diagnosis technique based on 3-D imaging. Policy planning of a cancer risk assessment technique based on genetic analysis. Policy planning of against of cancer cells drug sensitivity measurement method. Policy planning of against of cancer cytodiagnosis cetting equipment for cancer cytodiagnosis cheming diagnosis of a datomatic testing equipment for cancer cytodiagnosis cetting equipment for cancer cytodiagnosis cheming diagnosis of adatomatic testing equipment for cancer cytodiagnosis cetting equipment for cancer cytodiagnosis cheming diagnosis on diagnostic imaging. Policy planning of classification and stage determination of schizophrenia based on diagnostic imaging. Policy planning diagnosing methods for determining the	

		focused by a non- invasive process				
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of a correct diagnostic measure for kidney diseases without renal biopsy.	19	Diagnosis and monitoring of disease	XIV - genitourina ry	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a capsule-type total gastro-intestinal tract monitoring system.	6	Diagnosis and monitoring of disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of specialist-level medical diagnosis assistance systems.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of non-invasive cell-level diagnostic imaging.	8	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a non-invasive technique to obtain blood biochemical examination data using body surface sensors.	9	Diagnosis and monitoring of disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation.	6	Diagnosis and monitoring of disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of malaria vaccines.	10	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an effective insulin that can be administered orally.	16	Treatment and management of symptoms and disease	IV - endocrine	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of gene therapy for diabetes.	16	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine

Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of gene therapy for familial hypercholesterole mia.	14	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of radiosensitizers effective in cancer treatment.	8	Treatment and management of symptoms and disease	II - cancers	Therapeutic procedures
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of heavy particle against cancer	14	Treatment and management of symptoms and disease	II - cancers	Non-surgical therapy
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a technique to cause drug delivery to targeted sites in the brain.	19	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a safe pain control method without side effects	12	Treatment and management of symptoms and disease	Other - generic	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of gene therapy for muscular dystrophy.	24	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective treatment for amyotrophic lateral sclerosis.	31	Treatment and management of symptoms and disease	VI - nervous	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of artificial muscles for limbs.	21	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a technique to induce the differentiation of fibroblasts into cardiac muscle and its application to the treatment of myocardial infarction.	20	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of hybrid-type artificial endocrine organs in which living	11	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine

		cells and artificial objects coexist.				
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of functional blood purifiers that selectively remove specified components from blood	19	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of artificial hemoglobin as a red blood cell substitute.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of fully implanted artificial heart	14	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial lungs.	29	Treatment and management of symptoms and disease	X - respiratory	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial kidneys	26	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial pancreas	12	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of prevention and treatment methods for tooth decay and periodontitis to ensure the retention of 20 or more teeth at 80 year of age	14	Health promotion and prevention of disease	XI - GI tract, dental health	Population programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to store, cultivate and transplant one's own tissues.	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of implanted bladder control devices	12	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials

Science & Technology	Policy planning	Practical use of gene therapy for	19	Treatment and management of	Other - generic	Regenerative medicine
Foresight survey Japan 1997	Pidililig	genetic disorders		symptoms and disease		medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Availability of genetherapy based on oral delivery	24	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of heterogeneous organ transplantation as means of treatment.	21	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a worldwide organ supply system	12	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a partial tissue destruction method noninvasive to the living body.	6	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of implanted artificial cochleas effective for both conductive hearing loss and perceptive hearing loss.	14	Rehabilitation	VIII - ear	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a device to sense the needs of demented aged people.	21	Supporting patients receiving care (designed to be used by individuals)	V - mental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of controlling devices which help the cooperative muscular actions enabling objectoriented movement.	14	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of artificial legs featuring a small power source and computer control.	11	Rehabilitation	XXI - screening, rehab	Devices and biomaterials

Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a blood cell production and supply technique based on industrial-scale cultivation.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of systems for monitoring health condition and providing information for an appropriate diagnosis at home in event of accident or diseases.	11	Supporting patients receiving care (designed to be used by individuals)	XIX - injury	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of portable conversational speech interpretation systems.	24	Unknown	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of robots that care for people with severe physical and mental disabilities.	12	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Advancements in patient and hospital information management, leading to a reduction in waiting time at Japanese hospitals to 15 minutes or less.	7	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use in Japan of an ID card system that thoroughly covers an individual's health conditions and medical data.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey	Policy planning	Elucidation of the biological clock, leading to drug	9	Supporting patients receiving care (designed to	Other - generic	Unknown

Japan 1997		administration that takes it into consideration		be used by individuals)		
Science & Technology Foresight survey Japan 1997	Policy planning	Practical application of the production of artificial cells with organ characteristics.	29	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of anti-AIDS therapy	12	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of anti-cancer agents which target the manifestation functions of cancer genes	10	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Utilization of information about the gene structure of each individual patient in diagnosis and treatment	16	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology to regenerate organs or individuals from separated animal cells	20	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of methods for directly determining DNA sequences by physical means such as X-rays.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Control of signal transduction in the carcinogenesis of cells, and widespread use of treatment	20	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

		methods for dysdifferentiating carcinogenic cells.				
Science & Technology Foresight survey Japan 1997	Policy planning	Complete understanding of the factors contributing to stem cell multiplication, and widespread use of the practice of multiplying stem cells, as necessary, in test tubes and using them for treatment purpose	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology capable of synthesizing living cells by using only artificially produced chemical compounds.	31	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of elementary particle beam technology in genetic engineering.	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of drugs capable of preventing the occurrence of certain types of cancer.	11	Health promotion and prevention of disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of effective means to prevent metastasis of cancer.	14	Treatment and management of symptoms and disease	II - cancers	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of technologies for long-term (semi-permanent) culturing and preservation of	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine

		organs.				
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of artificial organs (pancreases, kidneys, livers, etc.) incorporating human cells and	14	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an entirely implantable artificial kidney.	18	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an artificial cornea, allowing the visually impaired to regain their sight.	25	Treatment and management of symptoms and disease	VII - eye	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of artificial muscle elements.	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of interface technology between neural information and artificial organism structures.	25	Treatment and management of symptoms and disease	VI - nervous	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Development of neural-computers with new logic structures modeled on brain functions.	24	Unknown	VI - nervous	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of interfaces enabling direct linkage between the computer and the brain.	21	Treatment and management of symptoms and disease	XXI - screening, rehab	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of electric circuits with similar selforganization and self-restoration functions as neural networks.	14	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials

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Science &	Policy	Development of	24	Diagnosis and	Other -	Devices and
Technology	planning	diagnostic and		monitoring of	generic	biomaterials
Foresight survey		medical treatment		disease		
Japan 1997		micromachines				
		capable of				
		traveling on their				
		own inside				
		organisms (body				
		cavity organs).				
Science &	Policy	Widespread use	14	Supporting the	Other -	IT systems, eHealth
Technology	planning	of remote surgery		provision of care	generic	and mHealth
Foresight survey		systems utilizing		and/or increasing		
Japan 1997		virtual reality		service efficiency		
·		technology.				
Science &	Policy	Widespread use	9	Rehabilitation	XXI -	IT systems, eHealth
Technology	planning	of vicarious			screening,	and mHealth
Foresight survey	. 5	experience			rehab	-
Japan 1997		devices (using				
		virtual reality				
		technology) which				
		allow bed-ridden				
		patients to take				
		vacations, etc.				
Science &	Policy	Widespread use	14	Treatment and	III - blood	Unknown
Technology	planning	of methods for	•	management of	5.554	O TIME TO THE TENT
Foresight survey	pianing	controlling the		symptoms and		
Japan 1997		immune system		disease		
3apan 1337		locally		alsease		
Science &	Policy	Development of	21	Treatment and	VI -	Drugs (not
Technology	planning	effective		management of	nervous	prophylactic
Foresight survey		Therapeutic for		symptoms and		vaccines)
Japan 1997		amyotrophic		disease		,
3apan 1337		lateral sclerosis		discuse		
Science &	Policy	Practical use of	17	Treatment and	Other -	Devices and
Technology	planning	batteries of	17	management of	generic	biomaterials
Foresight survey	planning	artificial organs		symptoms and	generic	biomaterials
Japan 1997		implanted in the		disease		
Japan 1997		living body		uisease		
Science &	Policy	Development of	19	Treatment and	XI - GI tract,	Devices and
Technology	planning	artificial liver	15	management of	dental	biomaterials
Foresight survey	Pidining	(external devices		symptoms and	health	Siomaterials
Japan 1997		supporting liver		disease	ricaitti	
Japan 1337		functions) usable		uisease		
		on a long-term,				
		continuous basis				
Science &	Policy	Practical use of	19	Treatment and	Other -	Therapeutic
	-		13			<u> </u>
Technology	planning	heterogeneous		management of	generic	procedures
Foresight survey		organ		symptoms and		
Japan 1997		transplantation as		disease		
		means of				
		Therapeutic				

Science & Technology Foresight survey Japan 1997 Science &	Policy planning Policy	Development of artificial eyes featuring electronic circuitry that can be connected to nerve and brain cells Development of	24	Rehabilitation Rehabilitation	VII - eye	Devices and biomaterials Therapeutic
Technology Foresight survey Japan 1997	planning	methods for recombining disconnected central nerves			nervous	procedures
Loveridge et al 1998	Policy planning	Practical use of directly visualising molecular structure at an atomic level (e.g. ultramicroscopy)	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	At least 3 common diseases will be treated by portable or implanted systems that combine individually tailored drug delivery with automatic feedback control from a devices continuously monitoring the condition (e.g. diabetes control)	21	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Loveridge et al 1998	Policy planning	Over-the-counter nucleicacid-based tests suitable for self-administration become available for the first time	21	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Loveridge et al 1998	Policy planning	Results of more than 50% of all types of diagnostic tests are available at the point of need within one hour	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Loveridge et al	Policy	Widespread use	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	of real time 3-D high resolutiom imaging of physiological and metabolic		monitoring of disease	generic	and imaging
		functions				
Loveridge et al	Policy	First practical use	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	of non-invasive spectroscopy for in situ chemical pathology		monitoring of disease	generic	and imaging
Loveridge et al	Policy	Practical use of	21	Unknown	Other -	Devices and
1998	planning	biosensors in a wide range of medical manufacturing and environmental applications			generic	biomaterials
Loveridge et al	Policy	All common single	21	Treatment and	Other -	Drugs (not
1998	planning	genes diseases can be treated successfully by gene theraby	•	management of symptoms and disease	generic	prophylactic vaccines)
Loveridge et al	Policy	Practical use of	21	Treatment and	Other -	Drugs (not
1998	planning	gene therapy is extended to the treatment of 30% of major life threatening diseases		management of symptoms and disease	generic	prophylactic vaccines)
Loveridge et al 1998	Policy planning	Nucleic acid based diagnostic techniques account for 10% of all diagnostic e work load	21	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Loveridge et al 1998	Policy planning	First practical use of therapies based on purpose-designed non-peptide molecules which mimic the activity of peptides.	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of polypeptide drugs which are delivered orally and targeted to	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)

		specific tissues				
Loveridge et al 1998	Policy planning	Widespread use of cosmaceuticals with scientifically proven effectiveness to treat the sypmtoms of skin ageing (e.g. wrinkles)	21	Health promotion and prevention of disease	XII - skin	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of improved technologies for early diagnosis increases the 5-year survival rate of cancer patients by 50%	21	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	Practical use of drugs modulating cellular systems to treat cancer	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of nutritional supplements or special diets based on an understading of the role of nutrients such as anti-oxidants in cancer prevention	21	Health promotion and prevention of disease	II - cancers	Population programmes
Loveridge et al 1998	Policy planning	Practical use of substances that contain rather eleminate cancer (e.g. use agents that control metastasis)	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	New methods of treating arterial occlusion and myocardial infarction dramatically reduce morbidity from cardiovascular diseases in 40-50 age group	21	Treatment and management of symptoms and disease	IX - circulation	Unknown

Health promotion and prevention of disease IX - Population programmes
uisease
Treatment and III - blood Therapeutic
management of procedures
symptoms and
disease
discuse
Treatment and Other - Regenerative
management of generic medicine
symptoms and
disease
Health promotion I - Prophylactic
and prevention of infections vaccines
disease
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Health promotion I - Prophylactic
and prevention of infections vaccines
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Health promotion I - Prophylactic
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Health promotion I - Prophylactic
and prevention of infections vaccines

		efficacy for enhancing cognitive performance		symptoms and disease		vaccines)
Loveridge et al 1998	Policy planning	50% of patients presenting with mental illness such as schizphrenia and depression are diagnosed using objective genetic, biochemical or biophysical tests	21	Diagnosis and monitoring of disease	V - mental health	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	50% of surgical interventions carried out by minimum-access technique	21	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Loveridge et al 1998	Policy planning	10% of surgical interventions are carried out by robotic techniques	21	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Loveridge et al 1998	Policy planning	Development of biocompatible materials for implants which elicit the required host response (e.g. non-thrombogenic or stimulation of host repair mechanisms).	21	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Loveridge et al 1998	Policy planning	Widespread use for skin replacemt and/or repair of reliable products based on tissue engineering	21	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
Loveridge et al 1998	Policy planning	Practical availability for regular clinical use of functional human organ tissue for kidney, liver or pancreas	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Loveridge et al 1998	Policy planning	Widespread use of non-surgical (eg. by	21	Health promotion and prevention of disease	XXI - screening, rehab	Drugs (not prophylactic vaccines)

	1	T .	1	T	I	1
		vaccination) single				
		application				
		contraception				
		offering lifetime				
		control				
Loveridge et al	Policy	50% of	21	Health promotion	XXI -	Drugs (not
1998	planning	contraception		and prevention of	screening,	prophylactic
		involving		disease	rehab	vaccines)
		pharmacological				
		or vaccine				
		methods resides				
		with men				
Loveridge et al	Policy	50% of diagnostic	21	Supporting	Other -	IT systems, eHealth
1998	planning	and treatment		patients receiving	generic	and mHealth
		decisions involve		care (designed to		
		use of expert		be used by		
	•	systems		individuals)		
Loveridge et al	Policy	20% of time spent	21	Supporting	Other -	IT systems, eHealth
1998	planning	by doctors in		patients receiving	generic	and mHealth
		primary care		care (designed to		
		screeing is		be used by		
		replaced by		individuals)		
		patient		,		
		interaction with				
		experts systems				
Loveridge et al	Policy	Practical use of	21	Supporting	Other -	IT systems, eHealth
1998	planning	remote electronic		patients receiving	generic	and mHealth
		systems which		care (designed to		
		substitute human		be used by		
		labour in		individuals)		
		montoring the				
		physical				
		parameter of				
		elderly and people				
		with disability in				
		the community				
Loveridge et al	Policy	Widespread use	21	Supporting the	Other -	IT systems, eHealth
1998	planning	of unified and		provision of care	generic	and mHealth
		standardised		and/or increasing	Bellerin	
		electronic data		service efficiency		
		collection systems				
		and data				
		informats for				
		medical records				
Loveridge et al	Policy	At least 50% of	21	Supporting the	Other -	IT systems, eHealth
1998	planning	health care		provision of care	generic	and mHealth
]	centres (hospitals,		and/or increasing		
		clinic,etc) are		service efficiency		
		connected to				
		national				
		information				
			1			

Loveridge et al 1998	Policy planning	electronic networks for patient records and information on diagnosis, treatment and outcome Widespread use in health care of electronic information systems which span existing professional and organisational boundries (health, social service,	21	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Loveridge et al 1998	Policy planning	housing etc) Improved understanding of the role of gene- environment interactions in causing common structural birth birth defects (e.g. cleft palate) permits the implementation of primary preventable programmes	21	Health promotion and prevention of disease	XXI - screening, rehab	Population programmes
Loveridge et al 1998	Policy planning	Understanding how environmental factors encountered in early life cause adult disease leads to national standards for diet and lifestyle in pre-natal and early life	21	Health promotion and prevention of disease	XXI - screening, rehab	Population programmes
Loveridge et al 1998	Policy planning	Widespread use of financial inducements by national and private health insurers or similar bodies to adopt	21	Health promotion and prevention of disease	Other - generic	Organisational programmes

		healthier lifestyle or diets				
Loveridge et al 1998	Policy planning	The causes of the rising prevalence of asthma are elucidated and action based on this knowledge leads to a 50% reduction in the incidence of severe disease	21	Health promotion and prevention of disease	X - respiratory	Population programmes
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	X-ray replaced by Magnetic Resonance Imaging (MRI)	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	operating theatre of 2010 will be built with an ultra- open MRI system with parallel ultrasound facilities and complete optical capability	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Endoscopes will reduce in size as fibres, lenses and electronic sensors get smaller,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	ccD image sensors have the ability to see in both ultra-violet and near infra- red.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	New magnetic sensing technologies will detect the configuration of the endoscope and accessory devices inside the patient.	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Auto focus and zoom optical systems will be interfaced with 30 to take the endoscope imaging capability beyond what is currently possible with human vision.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	High resolution ultrasound in closer proximity to the tissue and structures to be studied	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Laser induced fluorescence imaging systems for diagnosis of early malignant changes, monitoring and therapy will become available.	14	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Near infra-red spectroscopy, for looking at tissue oxygenation state	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Confocal, or other optical, ultrasonic or magnetic resonance microscopy, for on-line histology of bulk samples	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Minimal Access Surgery is likely to account for as much as 75% of surgical procedures	14	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robotic camera holders are likely to become routine in laparoscopic procedures.	14	Treatment and management of symptoms and disease	Other - generic	Medical equipment

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table's control system and the robotics system could become integrated in the future operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Ability to ventilate all patients from neonates to adults	14	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Control handsets will incorporate dot matrix displays which will give the operator information about the condition of the table, position of the top and warnings about possible hazards	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table may have a built-in patient temperature regulation system.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Connection between the Operating Room and the Anaesthetic machine in the Control Room will be via the Anaesthetist in the Operating Room.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The Anaesthetic machine will incorporate both inhalation agent vaporisation and multi-drug infusion systems These devices will be electronically integrated into the monitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

	ı	T	T			
		and information				
		management and				
		anaesthetic				
		record keeping				
		system so that				
		vaporiser				
		concentration				
		settings and				
		infusion rates will				
		be continuously				
		recorded				
Operating theatre	Policy	Mechanical flow-	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	meters will be		provision of care	generic	
Department of		replaced by		and/or increasing	J	
Trade and		electronic gas		service efficiency		
Industry		mixing systems		Service emiciency		
Operating theatre	Policy	Patient	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	monitoring will be	17	patients receiving	generic	and mHealth
Department of	Piariring	very simple and		care (designed to	Sellelle	and minealth
Trade and				, •		
		intuitive probably		be used by		
Industry		touch screen and		individuals)		
		quite possibly				
		voice activation.				
Operating theatre	Policy	Monitors will also	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	network into		patients receiving	generic	and mHealth
Department of		central areas		care (designed to		
Trade and		outside the		be used by		
Industry		operating theatre		individuals)		
		so that, for				
		example,				
		anaesthetics being				
		delivered by less				
		experienced staff				
		can be monitored				
		remotely.				
Operating theatre	Policy	The operation	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	room will capture	1	patients receiving	generic	and mHealth
Department of	Pidilililig	the data from one		care (designed to	School	and miricultii
Trade and		or perhaps two		be used by		
Industry		small 'wireless'		individuals)		
illuustiy				inuiviuuais)		
		sensors placed on				
		the body that will				
		provide pulse				
		oxyimetry C02,				
		ECG and other key				
		parameter data				
		and then transmit				
		them to the				
		monitor via radio				
1	1	or IR technology.	I			

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Patient will be equipped with a belt (or other suitable garment) into which all monitoring and feed lines will be terminated, and which will include significant active capability. Drip and other lines will also be terminated in the belt	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Patient can be "plugged" into electrical support, monitoring and stimulation as well as fluid and chemical agents using a single connector to facilitate transfer of patient from one ward to another or from the operation theatre	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Operation lamp will be replaced by a better light source	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Automatic control of light pattern in the operation theatre	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating lamp of the future is likely to use much more electronics to accurately control the voltage, dimming, focus, tracking and to limit maximum light intensity to	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

		safe levels.				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating lamps of the future will be sealed for easy disinfection	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemedicine	14	Unknown	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemonitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Teleconsultation	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telesurgery for demonstartion or teaching	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Minimal access surgery (MAS)	14	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Systems in which as much of the patient's own blood is recovered and recycled as possible.	14	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Use of flexible endoscope technology to allow surgeons to see around and behind structures, giving the surgeon greater access and the patient a greater degree of safety.	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials

Operating theatre	Policy	A move away	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	from the use of X-		monitoring of	generic	and imaging
Department of		rays and image		disease	0	
Trade and		intensification				
Industry		towards more				
,		mobile methods				
		of MRI scanning.				
Operating theatre	Policy	Developments in	14	Treatment and	Other -	Therapeutic
of the year 2010;	planning	the use of laser		management of	generic	procedures
Department of	, in the second	and particularly		symptoms and	8	p. coom.
Trade and		electrosurgery		disease		
Industry		,				
Operating theatre	Policy	Use of robotics	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	and head up		provision of care	generic	
Department of	p8	display allowing		and/or increasing	80	
Trade and		surgeon sitting in		service efficiency		
Industry		a control room		,		
,		rather than being				
		in the theatre				
		with the patient				
Operating theatre	Policy	Coding will be	14	Supporting the	Other -	IT systems, eHealth
of the year 2010;	planning	used to associate		provision of care	generic	and mHealth
Department of		patient, operating		and/or increasing	0	
Trade and		procedure (and so		service efficiency		
Industry		appropriate tools		,		
,		and drugs),				
		support facilities				
		and to generate				
		automatic records				
		of usage.				
Operating theatre	Policy	Tools and devices	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	for a procedure		provision of care	generic	
Department of		will be located in a		and/or increasing		
Trade and		carousel		service efficiency		
Industry		analogous to that				
,		for a computer				
		numerically				
		controlled				
		machine tool. This				
		will allow the				
		surgeon to				
		present his tool				
		holder to it, have				
		the old tool				
		extracted and a				
		new one inserted.				
Operating theatre	Policy	Robots will be	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	used as transport		provision of care	generic	
Department of		vehicles both		and/or increasing		
Trade and		within the		service efficiency		
Industry		operating room		,		

		and for the surrounding support areas				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will carry out very precise procedures controlled by the surgeon from a distance,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Joint replacement be performed robotically	14	Treatment and management of symptoms and disease	XIII - musculoske letal	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operation theatre may be controlled by a robot "software" box th at will respond to voice recognition of the surgeon and change factors such as the heating of the theatre, the lighting and position of the table	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A robot would be able to transfer sterile instrument trays from a central sterile store to the surgeon at the operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Transport Robots could be used in the supply and disposal functions outside the operating room within the operating suite	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will be used in moving patients from ward to theatre areas (to replace the use of porters)	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Using dedicated robot trucks similar to the supply trucks, waste could be collected on a regular basis from each theatre and taken to an automatic local waste reduction/disposal facility adjacent to the theatre suite.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Disposal of hospital material could be performed on site with the use of machines such as "needle eaters"	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Bulky X-Ray machines will probably be a thing of the past and replaced by computerised radiology	14	Diagnosis and monitoring of disease	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A central control room, with visual links to each theatre served, could house all of the equipment.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	All theatres could be designed with ultra-clean ventilation systems or an adapted containment system to reduce the risk of the spread of infection	14	Health promotion and prevention of disease	I - infections	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Patients identification bracelets could be coded and bar checked as they moved through	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment

		the system so that their progress could be monitored at all times				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Automated trolleys and doors that can be electronically controlled by robots	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Further development of 3D imaging techniques.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Fluorescenceassist ed Resection and Exploration (FLARE) technologies, which combine both visible light imaging with near-infra red imaging of fluorescent biomarkers, can detect particular pathologies associated with tumours without the need for biopsy	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Colour X-ray or TEDDI imaging can be used to biopsy tissues by utilising scattered X-rays to build a spatially-resolved picture that can distinguish between different materials.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	In vivo neuroimaging, both at the tissue and cellular level	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the	Policy planning	Brain imaging techniques such as functional	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

2020s, 2010		magnetic resonance				
UK technology and innovation futures for the 2020s, 2010	Policy planning	imaging (fMRI) Lab-on-a-Chip (LOC) devices integrate and scale-down	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
		biomedical and other analytical laboratory functions and processes to a miniaturised chip format.				
UK technology and innovation futures for the 2020s, 2010	Policy planning	Nucleic acid probes and diagnostic microarray systems can	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
		detect the nucleic acid sequence or sequences that identify a specific infectious disease				
		agent, human genetic disease or individual (DNA profiling).	O_			
UK technology and innovation futures for the 2020s, 2010	Policy planning	A new focus on single-stranded DNA, micro RNA (miRNA) and double-stranded RNA (dsRNA) technologies as	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
		therapeutics may lead to clinically-approved interventions for gene therapy and treatment of			1	
UK technology and innovation futures for the 2020s, 2010	Policy planning	medical disease. RNA interference (RNAi) may lead to new treatments.	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Viruses, bacteria or yeasts may be able to act as carriers for new sequences of DNA	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine

UK technology and innovation futures for the 2020s, 2010	Policy planning	Increased understanding of individual sensitivities to drugs	10	Diagnosis and monitoring of disease	III - blood	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	DNA vaccines for AIDS, malaria, hepatitis B and certain cancers may be available within 10 years	10	Health promotion and prevention of disease	Other - generic	Prophylactic vaccines
UK technology and innovation futures for the 2020s, 2010	Policy planning	New treatments for for neurodegenerative conditions such as dementia.	10	Treatment and management of symptoms and disease	VI - nervous	Unknown
UK technology and innovation futures for the 2020s, 2010	Policy planning	'Cognition enhancers'; substances that enhance the performance of our brain in specific ways, such as improving short-term memory and increasing our speed of thought enhancement through lifestyle drugs may will become the norm.	10	Treatment and management of symptoms and disease	VI - nervous	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	'Emoticeuticals', drugs that act by changing hormone levels in the body, may mediate our responses in our private lives and work.	10	Treatment and management of symptoms and disease	V - mental health	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	Sensoceuticals' might enhance pleasure by restoring or accentuating the senses.	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	The advent of a drug that mimics the positive effects of alcohol	10	Health promotion and prevention of disease	V - mental health	Drugs (not prophylactic vaccines)

		with none of its drawbacks.				
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells replacing malfunctioning liver cells or even growing entire livers to replace diseased ones	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new neurons to those with brain damage	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new heart cells to those with heart disease	10	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for Parkinson's and Alzheimer's diseases	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for spinal cord injury, stroke, cancer, burns, cardiovascular disease, diabetes, osteoarthritis and rheumatoid arthritis; as well as furnishing an endless supply of red blood cells for transfusions.	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Development of a cheap antimalarial drug.	10	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	Programming a bacterium or virus that can identify malignant cells and can deliver a therapeutic agent could have major benefits for treating cancer and similar illnesses	10	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

UK technology and innovation futures for the 2020s, 2010	Policy planning	Stratified medicine: it will become increasingly possible to analyse an individual for certain biomarkers to determine the best course of treatment	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Personalised medicine	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	In-situ tissue regeneration: Material is implanted directly in the body and regenerates the tissue over time as the material degrades.	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Tissue engineering: Material can act as temporary scaffold for cell culture and tissue growth in vitro	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Micro-masonry and 3D organ printing techniques	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Brain Computer Interface	10	Rehabilitation	Other - generic	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Neuroprosthetics: the connection can occur between any part of the nervous system (such as peripheral nerves) and a device.	10	Rehabilitation	VI - nervous	Devices and biomaterials

UK technology and innovation futures for the 2020s, 2010	Policy planning	Magnetoencephal ography (MEG): maps brain activity by recording the magnetic fields produced by electrical currents occurring in the brain	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional magnetic imaging (fMRI) – involves measuring changes in blood flow related to neural activity in the brain.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional Near- Infrared Spectroscopy (fNIRS) for optical topography	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Electrocorticograp hy (EoCG), measure the electrical activity of the brain using electrodes which are implanted inside the skull, but outside the brain tissue.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Implanted brain chips for controlling computers	10	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Neural prosthetics replace lost limbs	5	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled robots for personal healthcare	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled wheelchairs	10	Rehabilitation	XXI - screening, rehab	Medical equipment

UK technology and innovation futures for the 2020s, 2010	Policy planning	ehealth: Examples include health information networks, electronic health records, telemedicine services, personal wearable and portable mobile devices, health portals and other tools that assist in health monitoring, diagnosis and treatment.	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Lab-on-a-chip technologies could also bring diagnostics down to a personal scale, where patients can test themselves and transmit data electronically for analysis and treatment.	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Tailored Medicine	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	The anti-viral medicine with highly efficiency applies to clinical medicine widely	17	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	standardized safe evaluation system which include the technology for monitoring and examination of trans-gene biology will be established;	17	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes

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Past speculations of future health technologies: a description of technologies predicted in 15 forecasting studies 1986-2010

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ABSTRACT

Objective: To describe and classify health technologies predicted in forecasting studies.

Design and methods: Description of health technologies predicted in 15 forecasting studies published between 1986 and 2010 that were identified in a previous systematic review. Health technologies are classified according to their type, purpose and clinical use; relating these to the original purpose and timing of the forecasting studies.

Data sources: All health-related technologies predicted in 15 forecasting studies identified in a previously published systematic review.

Main outcome measure: Outcomes related to i) each forecasting study including country, year, intention and forecasting methods used and ii) the predicted technologies including technology type, purpose, targeted clinical area and forecast timeframe.

Results: Of the 896 identified health-related technologies, 685 (76.5%) were health technologies with an explicit or implied health application and included in our study. Of these, 19.1% were diagnostic or imaging tests, 14.3% devices or biomaterials, 12.6% information technology systems, eHealth or mHealth, and 12% drugs. The majority of the technologies were intended to treat or manage disease (38.1%) or diagnose or monitor disease (26.1%). The most frequent targeted clinical areas were infectious diseases followed by cancer, circulatory and nervous system disorders. The most frequent technology types were for: infectious diseases - prophylactic vaccines (45.8%); cancer - drugs (40%); circulatory disease - devices and biomaterials (26.3%), and diseases of the nervous system - equally devices and biomaterials (25%) and regenerative medicine (25%). The mean timeframe for forecasting was 11.6 years (range 0-33 years, median=10, SD= 6.6). The forecasting timeframe significantly differed by technology type (p=0.002), the intent of the forecasting group (p<0.001), and the methods used (p<001).

Conclusion: Description and classification of predicted health-related technologies is crucial in preparing healthcare systems for adopting new innovations. Further work is needed to test the accuracy of predictions made.

Strengths and limitations of the study

- The study is a comprehensive description and classification of health-related technologies predicted in 15 forecasting studies identified in a previously published systematic review.
- The study summarises the forecast technologies by type e.g. medical devices, diagnostic tests or drugs; by clinical purpose e.g. prevention, diagnosis or treatment and by targeted clinical area by ICD10 chapter; and relates this to the forecasting purpose and timeframe.
- The analysis and the health-related technologies identified are constrained by the methods used in the forecasting studies for example by the areas of interest of the experts involved.
- Although the study highlights the identified technologies, the retrospective accuracy of the studies remains to be researched.

INTRODUCTION

People are in general living longer and surviving previously life threatening illnesses. A proportion of this effect is attributed to the use of novel health interventions and technologies, such as new vaccines to prevent disease; new diagnostic tests to diagnose diseases earlier and with improved accuracy; and new drugs, devices and surgical procedures to treat diseases more effectively. In addition, new health technologies may also be used to enhance function and improve quality of life, such as prostheses, sensory aids and cosmetic enhancements. Technological advances and innovation are leading to new health interventions becoming available to healthcare markets at an increasing speed; these often cost more than current alternatives and significantly affect the cost of healthcare services and delivery. To ensure that patients can access the most effective and cost effective interventions, and because many health systems work within constrained budgets, healthcare systems need to be prepared to respond to new developments. A crucial step in such preparation is the accurate identification and forecasting of likely significant technological healthcare developments.

Forecasting is widely used for planning and strategic decision making around industrial and economic development at organisational, regional and national levels.⁵ Within healthcare, forecasting can be used to build strategies for supporting innovators and companies to develop new interventions; to plan future research programmes and delivery of healthcare; and to prepare health services and personnel to respond to technological developments of benefit to patients and service provision. Health technology forecasting uses various methods such as Delphi surveys and reviews of the literature^{6,7,8} to identify emerging health technologies that are intended to address important unmet healthcare needs or that need additional evaluation, and to analyse their potential impact on patients and health systems.⁴

To get the maximum benefit from forecasting, it is important that the methods used to identify emerging interventions and technologies are appropriate for the aims and timeframe of the forecasting exercise and also as accurate as possible.

In a recent systematic review⁹ we found 15 forecasting studies with 3 to 20 year timeframes that identified emerging health-related topics and technologies predicted between 1986 and 2010 from 12 high income countries, including six from the United Kingdom (UK). Identifying and classifying the predicted new technologies into meaningful groupings is important for healthcare system preparedness, allowing planned assessment and adoption as appropriate. Here we describe and classify the health technologies predicted in the forecasting studies according to their type, purpose and clinical use. We relate these to the forecast time period and develop an overview of the technological and clinical frontiers of innovation in health and healthcare provision.

METHODS

See table 1 for a full list of the 15 studies identified in our prior systematic review. We extracted all forecast topics from the 15 forecasting studies using a standardised set of data for each of these predicted topics and on the source study. Data related to the forecast topics included the name of the topic as written in the forecasting reports and papers, and the predicted forecast timeframe. Data related to the study included the country or region of the forecast, year the study was undertaken, its intention and remit, the study forecasting timeframe, and the number and type of forecasting methods used.

Identification and inclusion of health technologies

For final inclusion and analysis, topics had to be health technologies as defined by the National Institute of Health Research (NIHR) Health Technology Assessment (HTA) programme¹⁰: "any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease". We also included topics that related to the recognition of, or change in, health states or emotions, or health-related behaviours. All topics needed to have an explicit or implied health-related application or identified patient group for final inclusion. Topics were excluded if they related exclusively to foods, plants, animals, insects, new sources of fuel or energy, environmental contamination, legislation or health insurance.

LD read all the included studies and manually extracted all technologies mentioned in the forecast from the published text and related tables. Two authors (CP and LD) independently scrutinised each identified topic and applied the inclusion and exclusion criteria. Where there was insufficient information on a topic to make the inclusion/exclusion decision, we undertook brief and very limited searches on the Internet to find additional information.

All topics classed as a health technology with an explicit or implied health-related application, were subsequently coded based on their technology type, intended purpose, and targeted clinical use:

Technology type: we used broad categories: assistive devices and rehabilitation aids; devices and biomaterials; diagnostic tests and imaging; drugs; information technology (IT) systems, electronic health systems (eHealth) and mobile health (mHealth); medical equipment; non-surgical therapy; organisational programmes; prophylactic vaccines; population programmes; regenerative medicine approaches; and therapeutic procedures.

Technology purpose: we used categories that relate to the intended point on the patient pathway: health promotion and the prevention of disease; diagnosis and monitoring of disease; treatment and management of symptoms and disease; and rehabilitation. We supplemented these with two groupings that categorised technologies that support the provision of care i) supporting patients receiving care and designed to be used by individuals (patients, caregivers or healthcare professionals) and ii) supporting the provision of care and/or increasing service efficiency.

Targeted clinical area (specialty): we used the international statistical classification of diseases and related health problems 10th revision (ICD10)¹¹ chapter headings relating to diseases and other morbid conditions (chapters I-XVII); symptoms, signs and abnormal findings (chapter XVIII); injuries, poisoning and other consequences of external causes (chapter XIX); external causes of diseases and morbid conditions chapter XX); and factors influencing health status and contact with health services for people not currently sick (chapter XXI). Chapter XXI includes contraception,

technologies used in population screening, health promotion and disease prevention, and general rehabilitation.

All topics with disputed inclusion, exclusion or categorisation were initially discussed between two authors (LD and CP) and disagreements resolved where possible. Where disagreements remained, topics were discussed with the other authors as a group and the final categorisation agreed through consensus.

Technology forecast timeframe: for each health-related technology forecast we calculated the difference in years between each technology's predicted year of impact as identified in the original study, and the year when the prediction was made, i.e. the year of the original study. Technology forecasts were classified as short term if their forecasting timeframe was less than 3 years, short to medium term if it was 3-10 years, medium to long term if it was 11-20 years and long term for those with timeframes of more than 20 years. Although the original systematic review excluded forecasting studies which exclusively adopted a short time frame of less than 3 years, some studies with longer time frames also provided predictions with shorter time frames, and these were included in the analysis.

Data analysis

We analysed the data using IBM SPSS statistics (version 22) for Windows. We present descriptive analyses as means and standard deviations (SD) for normally distributed continuous variables. Statistically significant differences were determined using ANOVA for continuous normally distributed data and X² for dichotomous variables.

RESULTS

We identified 896 predicted topics from the 15 forecasting studies. Of these, we judged that 685 (76.5%) were health-related technologies with an explicit or implied health-related application. The most frequently excluded topics were those that described advances in the underpinning scientific knowledge (8.7%), such as determination of whole human DNA base sequence and identifying genetic links to

diseases. A full list of the included health-related technologies is attached as an online appendix.

Of the 685 health-related technologies, 52.3% were forecast from 6 studies by governmental organisations (such as the UK Department of Trade and Industry¹²), 21.9% by commercial/consultancy organisations (such as British Telecommunications plc¹³), 14.5% by policy planning groups (such as Loveridge et al 1995⁶), 8.9% by research groups (such as those by Stevens et al 1997⁷), and 2.5% by non-profit organisations (such as Institute of the Future¹⁴). Looking at the purpose of forecasting, our data showed that two thirds (68%) of the health technologies were forecast for policy planning purposes, 18.1% for research purposes and 13.9% for commercial purposes.

Nearly half (48.9%) of the identified technologies were from 6 UK-based studies and reports, 15.0% were from Japan, 11.7% from the Netherlands, 11.4% from the United States of America (USA) and 8.0% from Canada. The remainder were from a homogenous group of developing countries and South Africa (3.8%), other European countries (0.9%) and China (0.3%).

Technology type

Of the 685 health technologies forecast, 19.1% were diagnostic tests and imaging technologies, such as advanced ultrasound imaging systems and molecular diagnosis; 14.3% were devices and biomaterials, such as tissue engineered devices and drug impregnated devices; 12.6% were IT systems, eHealth and mHealth, such as electronic prescriptions and telemedicine; 12.0% were drugs, such as new anaesthetic vapours and electronically activated drugs; and 11.7% were regenerative medicine approaches, such as gene therapy for diabetes and widespread use of gene therapy for familial hypercholesterolemia (Table 2 and online appendix). Drug technologies were more commonly forecast in studies carried out by researchers (36.1%) than other groups, while technologies for diagnostic tests and imaging were more commonly forecast in studies by governmental agencies than other groups (Table 3). Regenerative medicine approaches were the most commonly forecast technologies (23.2%) by studies with a commercial intent while diagnostic tests and imaging were the most commonly forecast technologies by

studies with policy planning and research intentions (20.6% and 23.4% respectively) (p<0.001).

Technology purpose

Of the 685 health technologies included in the forecasting reports, 38.1% were for the treatment and management of symptoms and disease, such as development of effective treatment for amyotrophic lateral sclerosis and the practical use of gene therapy for genetic disorders; 21.6% for the diagnosis and monitoring of disease, for example a diagnostic bio-chip for cancer and the further development of 3D imaging techniques; 13% for health promotion and the prevention of disease, such as the first effective vaccine of HIV and DNA vaccines for AIDS, malaria, hepatitis B and certain cancers; 10.2% for supporting the provision of care, for example tele-monitoring and teleconsultation; 8.0% for supporting patients receiving care, such as smart pill bottles to remotely monitor medication use and thought-controlled robots for personal healthcare; and 4.7% for rehabilitation, for example artificial legs and robotic prosthetics.

Technologies for treatment and disease management were the most common regardless of the intention of the study: 35.8% among studies with a commercial intent, 35.8% for policy planning and 48.4% for research. Technologies for treatment and disease management were also the most common technologies forecast by all the various groups (60.7% among researchers, 39.9% among governmental organisations and 35.8% among commercial organisations).

Targeted clinical area

Using the ICD10 codes to define the targeted clinical area, just over half of the health technologies (50.4%) were for diseases and conditions that were not specified or that could not be coded or that crossed multiple specialities. Of the 340 health technologies that could be coded to a specific ICD10 chapter, the top five targeted clinical areas were: 1) infectious and parasitic diseases ICD-I (14.1%), such as development of vaccines for AIDS and vaccines for malaria, 2) neoplasms ICD-II (11.8%), such as expanding metal stents for oesophageal cancer and diagnostic biochip for cancer, 3) diseases of the circulatory system ICD-IX (11.2%), such as artificial muscles in replace of heart transplants and implantable vascular stents, 4)

diseases of the nervous system ICD-VI (10.6%), such as artificial brain cells and artificial peripheral nerves and 5) factors influencing health status and contact with health services ICD-XXI (10.3%), such as a personal wearable health monitor and extension of average lifespan to over 100.

Congenital malformations, deformations and chromosomal abnormalities ICD-XVII and symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified ICD- XVIII had the fewest forecast technologies (0.3% each).

Table 4 shows the technology types and purposes for the forecast technologies within the five most frequent targeted clinical areas. The most frequent technology type forecast for infectious and parasitic diseases were prophylactic vaccines (45.8%); for cancer were drugs (40%); for diseases of the circulatory system were devices and biomaterials (26.3%); for diseases of the nervous system were devices and biomaterials (25%) and regenerative medicine (25%); and for factors influencing health status and contact with health services including screening and rehabilitation, devices and biomaterials (31.4%). The most frequent technology purpose was health promotion and disease prevention for both infectious and parasitic diseases (ICD-I) (60.4%) and factors influencing health status and contact with health services including screening and rehabilitation (ICD-XXI) (51.4%). Technologies for treatment and disease management were most common for cancer (55.0%), diseases of the circulatory system (65.8%) and nervous system disorders (61.1%).

Technology forecast timeframe

Data was available to calculate the prediction timeframe for 607 of the identified health technologies. The mean timeframe for forecasting predictions was 11.6 years (range 0-33 years, median=10, SD=6.6). There was a significant difference in the mean prediction timeframe by technology type (p=0.002), with non-surgical therapies having the shortest mean forecast timeframe (9.07 years) and population health programmes having the longest mean forecast (14.53 years) (Table 5). There were no statistically significant differences in the mean duration of the technology prediction timeframe by the technology purpose and we were not able to detect any particular trend in the technology types or purposes of forecast over time.

There was a statistically significant difference in the forecast timeframe by the type of group undertaking the forecasting (p<0.001): 58% of the long-term forecasts (>20 years) were made by policy planning groups and 51% of short-term forecasts (<3 years) were by research groups.

Technologies forecast by studies with research intentions had the shortest mean forecast timeframe (4.49 years) while those for policy making had the longest timeframe (14.16 years) (p<0.001). Similarly, technologies forecast by researchers had significantly shorter mean timeframes (3.56 years) compared to those made by governmental agencies which had the longest mean forecast timeframes (13.42 years) (P<0.001).

There was a statistically significant difference in the mean forecast timeframe when considering the forecasting method (p<0.001) (Figure 1). Technologies forecast using methods that included creativity-based methods which require brainstorming, such as scenario building, had a significantly longer forecasting timeframe (13.5 years) compared to those did not include creativity-based methods such as literature reviews (9.7 years) (p<0.001). On the other hand technologies forecast using methods that included evidence-based methods such as literature reviews and evidence from health technology assessment (HTA) organisations, had significantly shorter forecasting timeframes (8.2 years) than those that did not include evidence-based methods (10.8 years) (p<0.001).

DISCUSSION

Being aware of forthcoming developments in healthcare and preparing for the future is essential for health policy makers, whether developing healthcare policy, directing future research or commissioning health services. We found that more than two thirds of the identified technologies were forecast for policy planning purposes and over half were forecast by governmental organisations, and that the majority of long-term forecasts were made by policy planning groups as opposed to research groups. This finding supports the premise that the majority of forecasting is carried out for service preparedness and long-term planning, and strategic decision making.⁵

Our study identified and classified a number of important health-related technologies, which health services may have already had to manage or will have to do so in the future. Our finding that nearly 60% of the technologies were either for the treatment and management of symptoms and disease or for the diagnosis and monitoring of disease can perhaps be explained by the methods used for forecasting. Many of the studies involved soliciting the opinion of experts and, although it is not possible to be certain about the areas of interest of those involved, their expertise may have made them more likely to focus on diagnosis and treatment than, for example, organisational programmes or rehabilitation. Regenerative medicine approaches were the most commonly forecast technologies by studies with a commercial intent. In contrast, drugs and related technologies (but not prophylactic vaccines) were the most common forecasts made by researchers.

The four clinical areas with the greatest number of forecast health technologies: infectious diseases, cancer, and circulatory and nervous system diseases and disorders, include many of the major causes of death and disability in countries today. Again we are not able to determine if this merely reflects the interests of the groups carrying out the forecasting and their areas of expertise or whether it truly represents the technology innovation frontier. It is understandable that the forecasts for infectious disease included many prophylactic vaccines as these have proven to be a cost effective preventive strategy for their prevention. This was also supported by our finding that forecasts of vaccine related technologies were only made by governmental agencies and policy research groups. In cancer, forecasting included both drugs and diagnostic tests and imaging, perhaps reflecting increasing targeting in novel cancer therapies. Several forecasts of regenerative medicine approaches for nervous system diseases and disorders is also interesting, with many of these diseases not currently curable or effectively treated.

Our finding that forecasts which included creativity-based methods such as scenario building and analysis had, on the whole, longer forecast timeframes than studies that included evidence-based methods may have a rationale. Evidence-based methods require there to be research evidence on technologies which will therefore probably be nearer to any predicted impact. In contrast, creativity-based methods require experts to think more widely about what the future could be, and are not therefore

constrained by what is actually being currently researched and published. This may also explain our finding that just over half of the short-term forecasts were made by research groups who may be more likely to use published evidence to inform their deliberations.

We believe that this is the first study to comprehensively identify and summarise health-related technologies predicted in past forecasting projects and to categorise and describe them. Although as many predicted topics as possible were included, we did exclude a substantial number. This was often because we could not envisage a future health application or because there was insufficient information to make a judgement (and many topics had very sparse titles or descriptive information). By excluding topics in this way, we may have excluded some that would have had an explicit health application within a reasonable timeframe. In addition, it is likely that we were unable to identify a number of relevant forecasts made by commercial organisations, which will have been conducted and disseminated in confidence.

Our description and classification of predicted health-related technologies from prior forecasting studies provides an overview of the technological and clinical frontiers of innovation in health and health care provision. To complete our evaluation of the accuracy of previous forecasting predictions and the forecasting methods used, the accuracy of the predictions made should also be assessed. This may be difficult across all technology types and clinical areas, but possible by limiting the evaluation to specific clinical areas and/or technology types or to those topics with more obvious health applications and timeframes that have already occurred.

CONTRIBUTERS

All authors have directly participated in the planning and execution of the study. LD extracted the study data. LD and CP independently reviewed the technologies to be included. LD and CP drafted the paper and DW, SS and AS critically revised the manuscript. All authors agreed the final version of the paper. All authors had full access to all of the data.

DISCLAIMER

This report presents independent research funded by the National Institute for Health Research (NIHR). The views expressed in this publication are those of the authors and not necessarily those of the National Health Service, the NIHR or the Department of Health.

COMPETING INTERESTS

The authors report that they do not have any conflicts of interest.

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DATA SHARING

A full list of health technologies included in the study is available in a supplemental document submitted with this article. More details on data are available from the corresponding author at I.doos@bham.ac.uk.

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Table 1: The 15 forecasting studies identified in the prior systematic review

Study name or first author	Year of forecast	Country
Dutch Steering Committee on Future Health Scenarios (STG) 1988	1986	Netherlands
Spiby, 1988	1988	UK
Loveridge et al 1995	1994	UK
Stevens et al, 1997	1995	UK
Karim, National Research and Technology Foresight Project, 1999	1996	South Africa
Operating theatre of the year 2010; Department of Trade and Industry report 1999	1996	UK
Cahill and Scapolo, 1999	1998	Europe
Daar et al, 2002	2002	Developing countries
Technology foresight towards 2020_China	2003	China
British Telecommunications (BT) calendar	1997 & 2005	United Kingdom (UK)
Tremblay and Yiu, 2006	2006	Canada
Food and Drug Administration (FDA) surveys	1998 & 2008	United States of America (USA)
Institute of the Future, 2009	2009	USA
Science & Technology Foresight Survey, 2010	Every 5 years from 1971, latest survey 2009-10	Japan
UK technology and innovation futures for the 2020s, 2010	2010	UK

Source: Doos et al 20169

Table 2: Health technologies by technology type

Technology type	Number	%
Diagnostic tests and imaging	131	19.1
Devices and biomaterials	98	14.3
IT systems, eHealth and mHealth	86	12.6
Drugs (not prophylactic vaccines)	82	12.0
Regenerative medicine	80	11.7
Medical equipment	37	5.4
Therapeutic procedures	36	5.3
Unknown	33	4.8
Organisational programmes	26	3.8
Prophylactic vaccines	24	3.5
Population programmes	24	3.5
Non-surgical therapy	15	2.2
Other	9	1.3
Assistive devices	4	0.6
Total	685	100.0

Table 3: Technology type by forecasting group

T	Forecasting group								
Technology type	Commercial organisation	Consultancy agency	Governmental agency	Independent non-profit organisation	Researchers	Policy research group	Total		
Assistive devices	3 (3.2%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (0.6%)		
Devices & biomaterials	16 (16.8%)	6 (10.9%)	56 (15.6%)	3 (17.6%)	7 (11.5%)	10 (10.1)	98 (14.3%)		
Diagnostic tests & imaging	6 (6.3%)	26 (47.3%)	63 (17.6%)	3 (17.6%)	9 (14.8%)	24 (24.2%)	131 (19.1)		
Drugs (non- prophylactic vaccine)	7 (7.4%)	2 (3.6%)	31 (8.7%)	1 (5.9%)	22 (36.1%)	19 (19.2%)	82 (12.0%)		
IT systems, eHealth, mHealth	18 (18.9%)	7 (12.7%)	43 (12.0%)	3 (17.6%)	3 (4.9%)	12 (12.1%)	86 (12.6%)		
Medical equipment	2 (2.1%)	5 (5.5%)	31 (8.7%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	37 (5.4%)		
Non-surgical therapy	1 (1.1%)	0 (0.0%)	9 (2.5%)	1 (5.9%)	3 (4.9%)	1 (1.0%)	15 (2.2%)		
Population programme	5 (5.3%)	0 (0.0%)	9 (2.5%)	3 (17.6%)	1 (1.6%)	6 (6.1%)	24 (3.5%)		

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Total	95 (100%)	55 (100%)	358 (100%)	17 (100%)	61 (100%)	99 (100%)	685 (100%)
Others	4 (4.2%)	1 (1.8%)	2 (0.6%)	0 (0.0%)	0 (0.0%)	2 (2.0%)	9 (1.3%)
Unknown	9 (9.5%)	2 (3.6%)	16 (4.5%)	1 (5.9%)	1 (1.6%)	4 (4.0%)	33 (4.8%)
Organisational programme	2 (2.1%)	10 (10.6%)	11 (3.1%)	1 (5.9%)	4 (6.6%)	2 (2.0%)	26 (3.8%)
Therapeutic procedure	0 (0.0%)	1 (1.8%)	20 (5.6%)	0 (0.0%)	6 (9.8%)	9 (9.1%)	36 (5.3%)
Regenerative Medicine	22 (23.2%)	1 (1.8%)	48 (13.4%)	1 (5.9%)	4 (6.6%)	4 (4.0%)	80 (11.7%)
Prophylactic vaccine	0 (0.0%)	0 (0.0%)	18 (5.0%)	0 (0.0%)	0 (0.0%)	6 (6.1%)	24 (3.5%)

Table 4: Technology type and purpose for the five most common ICD_10 chapter headings

	Infectious	Cancer	Circulatory	Nervous	Health status,	
	disease	ICD_II	disorders	system	screening,	
Technology type	ICD_I		ICD_IX	ICD_VI	rehab ICD_XXI	Total
Assistive devices	-	-	-	-	3 (8.6)	3 (1.5)
Diagnostic tests and imaging	5 (10.4)	12 (30.0)	7 (18.4)	6 (16.7)	2 (5.7)	32 (16.2)
Devices and biomaterials	3 (6.3)	1 (2.5)	10 (26.3)	9 (25.0)	11 (31.4)	34 (17.3)
IT systems, eHealth and mHealth	146	-	-	1 (2.8)	3 (8.6)	4 (2.0)
Drugs (not prophylactic vaccines)	10 (20.8)	16 (40.0)	7 (18.4)	2 (5.6)	5 (14.3)	40 (20.3)
Regenerative medicine	-	2 (5.0)	7 (18.4)	9 (25.0)	-	18 (9.1)
Medical equipment	2 (4.2)	-	-	1 (2.8)	1 (2.9)	4 (2.0)
Therapeutic procedures	1 (2.1)	1 (2.5)	3 (7.9)	4 (11.1)	-	9 (4.6)
Organisational programmes	3 (6.3)	-	-	-	1 (2.9)	4 (2.0)
Prophylactic vaccines	22 (45.8)	-	-	-	1 (2.9)	23 (11.7)
Population programmes	1 (2.1)	2 (5.0)	2 (5.3)	1 (2.8)	3 (8.6)	9 (4.6)
Non-surgical therapy	-	2 (5.0)		1 (2.8)	-	3 (1.5)
Other/ unknown	1 (2.1)	4 (10.0)	2 (5.3)	2 (5.6)	5 (14.3)	14 (7.1)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)
Technology purpose						
Diagnosis & monitoring of disease	7 (14.6)	12 (30.0)	8 (21.1)	7 (19.4)	1 (2.9)	35 (17.8)
Health promotion & disease prevention	29 (60.4)	5 (12.5)	5 (13.2)	1 (2.8)	18 (51.4)	58 (29.4)

Treatment & disease management	11 (22.9)	22 (55.0)	25 (65.8)	22 (61.1)	1 (2.9)	81 (41.1)
Rehabilitation	0 (0.0)	0 (0.0)	0 (0.0)	4 (11.1)	15 (42.9)	19 (9.6)
Other and unknown	1 (2.1)	1 (2.5)	0 (0.0)	2 (5.6)	0 (0.0)	4 (2.0)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)

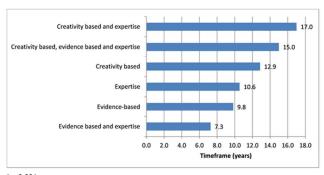
Table5: Mean technology prediction timeframe (years) by technology type*

	Number	Mean timeframe
Technology type		Years (SD)
Non-surgical therapy	14	9.07 (5.7)
Diagnostic tests and imaging	113	10.11 (6.0)
Drugs (not prophylactic vaccines)	75	10.31 (6.3)
Therapeutic procedures	31	10.45 (8.2)
Organisational programmes	25	10.48 (5.3)
IT systems, eHealth and mHealth	77	11.08 (5.5)
Devices and biomaterials	88	11.93 (6.8)
Assistive devices	3	12.33 (17.9)
Other/ unknown	40	13.35 (7.2)
Medical equipment	36	13.53 (2.7)
Regenerative medicine	73	13.58 (7.4)
Prophylactic vaccines	13	14.00 (6.3)
Population programmes	19	14.53 (5.9)
Total	607	11.59 (6.6)

^{*}p<0.002

Figure 1: Mean forecast timeframe by methods of forecasting

Figure 1: Mean forecast timeframe by methods of forecasting*



*p<0.001

81x60mm (300 x 300 DPI)

Report name (year)	Intention of the study	Technology Name	Tech. time frame	Purpose of the technology	Specialty	Technology type
BT Calendar 1997	Commercial	Artificial muscle use in place of heart transplants	1	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
BT Calendar 1997	Commercial	Telemed link to home with home blood test kit	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial intelligence based elderly and handicapped support devices	1	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial pancreas	1	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 1997	Commercial	Artificial blood	3	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 1997	Commercial	Disability assistance devices using thought recognition	3	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial ears	3	Rehabilitation	VIII - ear	Regenerative medicine
BT Calendar 1997	Commercial	Electronic implants used to stimulate muscles in disabled people	5	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
BT Calendar 1997	Commercial	Home (health) diagnostic systems, daily/real time check-up	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Virtual Reality based exercisers in homes	1	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Synthetic retinal implants for simple vision	8	Rehabilitation	VII - eye	Regenerative medicine
BT Calendar 1997	Commercial	Personal wearable health monitor	6	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial heart	13	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine

BT Calendar 1997	Commercial	Genetic screening	10	Health promotion	XXI -	Population
		widely used		and prevention of disease	screening, rehab	programmes
BT Calendar 1997	Commercial	Fine particle beam	12	Treatment and	Other -	Regenerative
Bi Calcildai 1997	Commercial	gene engineering	12	management of	generic	medicine
		Serie crismeering		symptoms and	generie	medicine
				disease		
BT Calendar 1997	Commercial	Artificial senses,	15	Rehabilitation	XXI -	Devices and
		sensors directly			screening,	biomaterials
		stimulating nerves			rehab	
BT Calendar 1997	Commercial	Prevention of	16	Health promotion	II - cancers	Population
		cancer		and prevention of		programmes
				disease		
BT Calendar 1997	Commercial	Custom foods for	13	Treatment and	Other -	Other
		particular medical		management of	generic	
		conditions will		symptoms and		
BT Calendar 1997	Comercancial	exist.	22	disease	V - mental	Denulation
Bi Calendar 1997	Commercial	Genetic programs to enhance	23	Health promotion and prevention of	health	Population
		human well-being		disease	Health	programmes
BT Calendar 1997	Commercial	Artificial lungs	18	Treatment and	X -	Regenerative
Br calcilaar 1997	Commercial	7 ti ciriciai iangs	10	management of	respiratory	medicine
				symptoms and	respiratory	The dienie
				disease		
BT Calendar 1997	Commercial	Artificial kidneys	18	Treatment and	XIV -	Regenerative
				management of	genitourina	medicine
				symptoms and	ry	
				disease		
BT Calendar 1997	Commercial	Artificial brain	20	Treatment and	VI -	Regenerative
		cells		management of	nervous	medicine
				symptoms and		
DT Calandar 1007	Camananaial	A	22	disease	VI CI too ot	Danas anatica
BT Calendar 1997	Commercial	Artificial liver	23	Treatment and	XI - GI tract,	Regenerative
				management of symptoms and	dental health	medicine
				disease	licaitii	
BT Calendar 1997	Commercial	Extension of	23	Health promotion	XXI -	Unknown
23.0		average lifespan		and prevention of	screening,	
		to over 100		disease	rehab	
BT Calendar 1997	Commercial	Artificial brain	28	Treatment and	VI -	Regenerative
		implants		management of	nervous	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial	28	Treatment and	VI -	Regenerative
		peripheral nerves		management of	nervous	medicine
				symptoms and		
BT Calendar 1997	Commercial	Artificial lags	22	disease	XXI -	Unknown
DI Calelluar 1997	Commercial	Artificial legs	33	Rehabilitation	screening,	OHKHOWH
					rehab	
1	I		1		, CHUD	

BT Calendar 1997	Commercial	Fully functional	33	Treatment and	VII - eye	Regenerative
Bi Calendar 1997	Commerciai		33		vii - eye	medicine
		artificial eyes		management of		medicine
				symptoms and		
DT Calaraday 2005	Compression	leasure attitude of	1	disease	O+b - :-	du
BT Calendar 2005	Commercial	laser activated	3	Treatment and	Other -	drugs (not
		drug capsules		management of	generic	prophylactic
				symptoms and		vaccines)
				disease		
BT Calendar 2005	Commercial	ultrasound or	3	Treatment and	Other -	drugs (not
		radio activated		management of	generic	prophylactic
		capsules		symptoms and		vaccines)
				disease		
BT Calendar 2005	Commercial	blood analysis	3	Diagnosis and	Other -	Diagnostic tests
		chips		monitoring of	generic	and imaging
				disease		
BT Calendar 2005	Commercial	e-Baybies	5	Health promotion	XXI -	Unknown
		electronic		and prevention of	screening,	
		conception		disease	rehab	
BT Calendar 2005	Commercial	Instant electronic	5	Diagnosis and	1-	Diagnostic tests
		identification of		monitoring of	infections	and imaging
		pathogens		disease		
BT Calendar 2005	Commercial	Online surgeries	5	Supporting the	Other -	IT systems, eHealth
		dominate first line		provision of care	generic	and mHealth
		medical care		and/or increasing	o .	
				service efficiency		
BT Calendar 2005	Commercial	active skin	5	Unknown	XII - skin	Unknown
Jaicilaai 2003	Commercial	active skill	3	Olikilowii	VII - 2KIII	OHKHOWH
BT Calendar 2005	Commercial		5		Other -	
		Cyber-drugs		Treatment and	Other -	Drugs (not
		Cyber-drugs (electronically		Treatment and management of		Drugs (not prophylactic
		Cyber-drugs		Treatment and management of symptoms and	Other -	Drugs (not
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs)		Treatment and management of	Other - generic	Drugs (not prophylactic vaccines)
		Cyber-drugs (electronically	5	Treatment and management of symptoms and disease Treatment and	Other -	Drugs (not prophylactic vaccines) Devices and
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and management of	Other - generic	Drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and	Other - generic	Drugs (not prophylactic vaccines) Devices and
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines) Devices and biomaterials
BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion	Other - generic XIX - injury	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical
BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of	Other - generic XIX - injury XI - GI tract,	Drugs (not prophylactic vaccines) Devices and biomaterials
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy
BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion	Other - generic XIX - injury XI - GI tract, dental health XXI -	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening,	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and	Other - generic XIX - injury XI - GI tract, dental health XXI - screening,	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor medication taking	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving care (designed to	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	

BT Calendar 2005	Commercial	diabetes cure via stem cell research	5	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
BT Calendar 2005	Commercial	Use of human's own tissues to grow replacement organs	8	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	Artificial senses	8	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
BT Calendar 2005	Commercial	context sensitive cyber drugs	8	Treatment and management of symptoms and disease	Other - generic	Unknown
BT Calendar 2005	Commercial	electronic stimulation of brain sensations as recreational substitute for drugs	8	Other	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Custom (GM) foods for particular medical conditions will exist.	8	Treatment and management of symptoms and disease	Other - generic	Other
BT Calendar 2005	Commercial	Gene-gel stimulation of re- growth of natural teeth on demand	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	retina regeneration using foetal retinal cell injection	8	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	tooth regeneration	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 2005	Commercial	plastic bones	8	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
BT Calendar 2005	Commercial	emotionally specific drugs	8	Unknown	V - mental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	synthetic organs by printing layers of cells	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	synthetic viruses	10	Unknown	1-	Other

					infections	
BT Calendar 2005	Commercial	sensory augmentation using sensory implants, nanoparticles etc	10	Rehabilitation	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	use of stem cells in brain after strokes or accidents	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	gene therapy generates new hair cells in humans	10	Treatment and management of symptoms and disease	XII - skin	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	artificial sensors used in cosmetic upgrade surgery	13	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
BT Calendar 2005	Commercial	Electronic memory enhancement	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	Nanobots in toothpaste attack plaque	20	Health promotion and prevention of disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	Fully functioning artificial eyes	20	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	electronic brain implants	20	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Intelligence or memory enhancement by external means	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	e-baybies, genetic conception	20	Health promotion and prevention of disease	XXI - screening, rehab	Unknown
BT Calendar 2005	Commercial	synthetic immune system	20	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 2005	Commercial	Artificial peripheral nerves	30	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	e-baybies, digital emulation conception	30	Health promotion and prevention of disease	XXI - screening, rehab	Unknown

	T	1	1 _	1		T.=
BT Calendar 2005	Commercial	Electronic	3	Supporting the	Other -	IT systems, eHealth
		prescriptions		provision of care	generic	and mHealth
		reduce fraud and		and/or increasing		
		improve speed		service efficiency		
BT Calendar 2005	Commercial	24/7 blood	3	Diagnosis and	Other -	Diagnostic tests
		chemistry		monitoring of	generic	and imaging
		monitoring		disease		
BT Calendar 2005	Commercial	supermarkets	3	Health promotion	Other -	Other
		used as major		and prevention of	generic	
		source of medical		disease	0	
		alerts				
BT Calendar 2005	Commercial	Expert systems	5	Supporting	Other -	IT systems, eHealth
Di Calcilaai 2005	Commercial	used extensively		patients receiving	generic	and mHealth
		in GP surgeries		care (designed to	generic	and minearm
		iii GP surgeries				
				be used by		
DT C-112005	6	Harrist I	_	individuals)	Other	1
BT Calendar 2005	Commercial	Hospitals use	5	Supporting the	Other -	IT systems, eHealth
		virtual queuing		provision of care	generic	and mHealth
		systems		and/or increasing		
				service efficiency		
BT Calendar 2005	Commercial	Neural networks	5	Supporting the	Other -	IT systems, eHealth
		used for patient		provision of care	generic	and mHealth
		appointment		and/or increasing		
		management		service efficiency		
BT Calendar 2005	Commercial	Multimedia	5	Supporting	Other -	IT systems, eHealth
		patient records		patients receiving	generic	and mHealth
		'		care (designed to		
				be used by		
				individuals)		
BT Calendar 2005	Commercial	Lifestyle	5	Health promotion	Other -	Population
Di Galeridai 2000	Commercial	monitoring and		and prevention of	generic	programmes
		insurance linked		disease	generic	programmes
		to medical records		uisease		
BT Calendar 2005	Commercial	antibacterial	5	Health promotion	1-	Devices and
BT Caleffual 2005	Commercial		5			
		coatings on		and prevention of	infections	biomaterials
		domestic		disease		
		appliances,				
		phones etc,				
		especially in				
		hospitals				
BT Calendar 2005	Commercial	flexible displays	5	Diagnosis and	Other -	IT systems, eHealth
		used for body		monitoring of	generic	and mHealth
		monitoring and		disease		
		alerts				
BT Calendar 2005	Commercial	emotion alerts	5	Health promotion	Other -	Devices and
				and prevention of	generic	biomaterials
				disease		
BT Calendar 2005	Commercial	(drug shortages	5	Diagnosis and	Other -	IT systems, eHealth
25.250. 2000		caused by)		monitoring of	generic	and mHealth
		internet diagnosis		disease	00	and milearen
		Internet diagnosis		uisease		

BT Calendar 2005	Commercial	MRSA detection	5	Diagnosis and	-	Population
Di Garendar 2000	Commercial	chips on sale in		monitoring of	infections	programmes
		high street		disease		
BT Calendar 2005	Commercial	Devices roaming	8	Unknown	Other -	Devices and
		within blood			generic	biomaterials
		vessels under own			0	
		power				
BT Calendar 2005	Commercial	Operations	8	Supporting	Other -	IT systems, eHealth
		videoed and		patients receiving	generic	and mHealth
		stored as part of		care (designed to	S	
		medical record		be used by		
				individuals)		
BT Calendar 2005	Commercial	Direct electronic	8	Other	V - mental	IT systems, eHealth
		pleasure			health	and mHealth
		production				
BT Calendar 2005	Commercial	Orgasm by email	8	Supporting	XIV -	IT systems, eHealth
				patients receiving	genitourina	and mHealth
				care (designed to	ry	
				be used by		
				individuals)		
BT Calendar 2005	Commercial	Artificial senses,	8	Rehabilitation	XXI -	Devices and
		sensors directly			screening,	biomaterials
		stimulating nerves			rehab	
BT Calendar 2005	Commercial	Smart membranes	8	Treatment and	Other -	Devices and
		for remote control		management of	generic	biomaterials
		of drug injection		symptoms and		
				disease		
BT Calendar 2005	Commercial	Domestic bacterial	8	Health promotion	1-	Diagnostic tests
		detection devices		and prevention of	infections	and imaging
				disease		
BT Calendar 2005	Commercial	Micro-fluidic chips	8	Diagnosis and	Other -	Diagnostic tests
		used for gene		monitoring of	generic	and imaging
		sequencing in		disease		
	<u> </u>	every GP surgery				
BT Calendar 2005	Commercial	Self certification	8	Supporting	Other -	IT systems, eHealth
		for prescriptions		patients receiving	generic	and mHealth
		using electronic		care (designed to		
		diagnostics		be used by		
DT Calandar 2005	Commoraial	Vicitor conitising	8	individuals)	1	Organisations
BT Calendar 2005	Commercial	Visitor sanitising in hospitals	ŏ	Health promotion	I - infections	Organisational
		แบบอยู่เเสเร		and prevention of disease	intections	programmes
BT Calendar 2005	Commercial	Outpatients at	8	Supporting	Other -	IT systems, eHealth
Di Calellual 2005	Commercial	home - remote	٥	patients receiving		and mHealth
		tele-medical		care (designed to	generic	and midealth
		consultations		be used by		
		CONSUITATIONS		individuals)		
BT Calendar 2005	Commercial	Individual's	8	Supporting	Other -	Organisational
DI Calellual 2005	Commercial		0	patients receiving		1 -
		genome part of their medical		care (designed to	generic	programmes
		record		be used by		

				individuals)		
BT Calendar 2005	Commercial	Portable bactericidal	10	Health promotion and prevention of	I - infections	Medical equipment
BT Calendar 2005	Commercial	devices Bactericidal saws incorporated onto materials in hospitals	10	disease Health promotion and prevention of disease	I - infections	Devices and biomaterials
BT Calendar 2005	Commercial	Robotic cleaners in hospitals	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Daar et al 2002	Research	Modified molecular technologies for affordable, simple diagnosis of infectious diseases	8	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Daar et al 2002	Research	Recombinant technologies to develop vaccines against infectious diseases	8	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Daar et al 2002	Research	Technologies for more efficient drug and vaccine delivery systems	8	Treatment and management of symptoms and disease	Other - generic	Unknown
Daar et al 2002	Research	Technologies for environmental improvement (sanitation, clean water, bioremediation)	8	Health promotion and prevention of disease	Other - generic	Unknown
Daar et al 2002	Research	Female-controlled protection against sexually transmitted diseases, both with and without contraceptive effect	8	Health promotion and prevention of disease	XIV - genitourina ry	Devices and biomaterials
Daar et al 2002	Research	Genetically modified crops with increased nutrients to counter specific deficiencies	8	Health promotion and prevention of disease	IV - endocrine	Unknown

Daar et al 2002	Research	Recombinant technology to make therapeutic products (for example, insulin, interferons) more affordable	8	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Karim2000	Policy planning	Telemedicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Medical databases	15	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Expert System in managed care and preventive medicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	diagnostic procedures (e.g. recombinant DNA techniques for parental screening)	15	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Karim2000	Policy planning	Therapeutic procedures (e.g. microsurgery and implanted muscle stimulators).	15	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Karim2000	Policy planning	Nanotechnology (e.g. devices which interact with tissues within the body to boost the immune system).	15	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Karim2000	Policy planning	Vaccines against infectious diseases	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of an AIDS vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of a TB vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Health promotion targeted at the youth	15	Health promotion and prevention of disease	Other - generic	Population programmes

Karim2000	Policy	Development of	15	Health promotion	Other -	Population
	planning	enriched and		and prevention of	generic	programmes
		fortified staple		disease		
		foods				
Karim2000	Policy	Development of a	15	Health promotion	1-	Prophylactic
	planning	malaria vaccine		and prevention of	infections	vaccines
				disease		
Karim2000	Policy	Development of	15	Diagnosis and	Other -	Diagnostic tests
	planning	on-site diagnostic		monitoring of	generic	and imaging
.,		tools	1	disease	200	
Karim2000	Policy	Development of	15	Health promotion	XXI -	drugs (not
	planning	female		and prevention of	screening,	prophylactic
	- "	contraceptives	<u> </u>	disease	rehab	vaccines)
Karim2000	Policy	Development of	15	Health promotion	1-	Devices and
	planning	barrier methods		and prevention of	infections	biomaterials
		and microbicides		disease		
		for sexually				
		transmitted				
		diseases and HIV				
Karim2000	Policy	Development of	15	Treatment and	1-	drugs (not
	planning	malaria drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Development of	15	Treatment and	1-	drugs (not
	planning	new TB drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Self management	15	Supporting	Other -	Organisational
	planning	tools for chronic		patients receiving	generic	programmes
		diseases (e.g.		care (designed to		
		hypertension,		be used by		
		diabetes,		individuals)		
		diarrhoea,				
		psychiatric				
W12000	D. II.	conditions)	45	Turk	Other	D
Karim2000	Policy	Tissue	15	Treatment and	Other -	Regenerative
	planning	regeneration and		management of	generic	medicine
		gene therapy		symptoms and		
Chiny 1000	Dosoorah	Monoslansi	0	disease	Other -	Diagnostic tests
Sbipy 1988	Research	Monoclonal antibodies will be	0	Diagnosis and		Diagnostic tests
		used in:		monitoring of disease	generic	and imaging
				uisease		
		Histopathological				
Shiny 1000	Research	techniques Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
Sbipy 1988	neseaitii	antibodies will be	0	monitoring of		Diagnostic tests and imaging
		used in:		disease	generic	and imaging
		Biochemical		いいとはいと		
		techniques				
Sbipy 1988	Research	Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
201h X 1200	Nesealcii			_		_
		antibodies will be		monitoring of	generic	and imaging

		used in: in-vivo diagnostic		disease		
Sbipy 1988	Research	Monoclonal antibodies will be used in: Identification and localization of tumours	0	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: diagnostic microbiology	0	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: diagnostic virology	0	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: To screen for potentially deleterious genes*	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: Diagnosing most genetic disorders	10	Diagnosis and monitoring of disease	XVII - congenital	Diagnostic tests and imaging
Sbipy 1988	Research	Genetic engineering will enable the isolation of high risk groups for common diseases	10	Health promotion and prevention of disease	Other - generic	Population programmes
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Ultrasound	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Doppler measurement	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: CT scanning	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Sbipy 1988	Research	Imaging techniques will be in widespread and	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
		less hazardous use including: NMR scanning				
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Nuclear medicine	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Positron detection*	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Three- dimensional dynamic imaging	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Drug therapy will be enhanced by: Genetic engineering	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug therapy will be enhanced by: Monoclonal antibodies used for drug targeting	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug delivery devices with or without in-vivo sensors	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Viral infections	0	Treatment and management of symptoms and disease	I - infections	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will be available for: Autoimmune diseases (monoclonal antibodies)	10	Treatment and management of symptoms and disease	III - blood	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will	0	Treatment and management of	IX - circulation	drugs (not prophylactic

		be available for:		symptoms and		vaccines)
		Heart failure		disease		
		(better drugs)				
Sbipy 1988	Research	More effective	10	Treatment and	IX -	drugs (not
J ,		Therapeutics will		management of	circulation	prophylactic
		be available for:		symptoms and		vaccines)
		Obstructive		disease		
		arterial lesions (by				
		removal and				
		control of				
		platelets and				
		synthetic vascular				
		prostheses)				
Sbipy 1988	Research	Cancer	10	Other	II - cancers	Other
, ,		(hyperthermia,				
		growth regulation				
	1	factors and				
		monoclonal				
		antibodies)				
Sbipy 1988	Research	Cardiac	10	Treatment and	IX -	Devices and
		arrhythmias		management of	circulation	biomaterials
		(implantable		symptoms and		
		mechanisms)		disease		
Sbipy 1988	Research	More effective	0	Treatment and	XIII -	Devices and
		Therapeutics will		management of	musculoske	biomaterials
		be available for:		symptoms and	letal	
		Arthritic joints		disease		
		(more				
		biocompatible				
		prosthetic				
		materials and a				
		wider range of				
		joint				
		replacements)				
Sbipy 1988	Research	More effective	0	treatment and	XIV -	Devices and
		Therapeutics will		management of	genitourina	biomaterials
		be available for:		symptoms and	ry	
		Incontinence		disease		
		(stimulation via				
		implantable				
61. 4065		electrodes)		B 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.1	0.1
Sbipy 1988	Research	More effective	0	Rehabilitation	Other -	Other
		Therapeutics will			generic	
		be available for:				
		Disability (wider				
		range of flow				
		technology aids				
		and biological				
		servomechanisms				
		linked to				
		computers and				

		robotics)				
Sbipy 1988	Research	More effective Therapeutics will be available for: Limb damage (permanent internal bone repair)	0	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Tropical parasitic diseases (vaccines)	0	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Sbipy 1988	Research	More effective Therapeutics will be available for: Mental disorders (neurotransmitter s)	10	Treatment and management of symptoms and disease	V - mental health	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Laser microsurgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser endoscopic surgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser angioplasty and angiography	0	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Sbipy 1988	Research	Other laser and endoscopic surgical techniques	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Cryosurgery	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Lithotripsy	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Transplantation will be enhanced by better techniques	0	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials

Sbipy 1988	Research	enabling long term in-vitro organ preservation and the prevention of rejection Bone marrow transplantation with purified stem cells and autologous material will be	0	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Sbipy 1988	Research	available A safe male pill for long-term use will be available	10	Health promotion and prevention of disease	XXI - screening, rehab	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Improved techniques for detecting ovulation will enhance natural family planning*	0	Diagnosis and monitoring of disease	XIV - genitourina ry	Diagnostic tests and imaging
Sbipy 1988	Research	Optical disc storage and communication will be used with X-rays and other diagnostic images	0	Supporting the provision of care and/or increasing service efficiency	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Computers will be used by clinical departments for data collection	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Expert interrogation will be possible due to data centralization	0	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Patient interviewing systems will be available in the surgery and in patients' homes	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Expert systems will enable diagnosis and define the most applicable treatment	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth

Sbipy 1988	Research	Linkage of computerized patient data will be available between all hospital, community and primary care services and settings	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Life style changing behaviours	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Screening for phenylketonuria	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Screening for congenital hypothyroidism	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Blood pressure can be checked by self-service meters	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	High serum cholesterol can be checked by fingerprick blood test	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	Certain cancer tests can be self- administered	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Improved diagnostic tests may be available for widespread use for screening at the community level	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Improved vaccine against cholera in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New malaria vaccine in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against hepatitus B	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines

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STG 1988	Policy planning	New vaccine against respiratory syncytial virus	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against influenza	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against AIDS	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against cytomegalovirus	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Better vaccine against Perussis	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Oral administration or administartion by nasal spray will facilitate mass immunization	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Creating vaccines containing antigens for several organisms given together (e.g. DPTPM)	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Shifts in diet toward lower intake of fat especially saturated fat	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Reliable and simple test for cholesterol	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	More effective and safer drugs for treatment of elevated cholesterol	N/A	Health promotion and prevention of disease	IX - circulation	drugs (not prophylactic vaccines)
STG 1988	Policy planning	Technologies for home use without professional supervision (e.g. home diagnostic kits)	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Disease conditions will be monitored from distant professional sites	N/A	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
				,		
STG 1988	Policy planning	Robotics will be used for mobility and assistance at home such as nutrition and cleaning	N/A	Rehabilitation	Other - generic	Assistive devices
STG 1988	Policy planning	Regeneration of central nervous system through the use of nerve growth factors or transplant neurotransmitter-producing cells into the brain	N/A	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
STG 1988	Policy planning	Grafting of the spinal cord or the peripheral nervous system	N/A	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
STG 1988	Policy planning	More safer & effective contraception	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Contraceptive vaccine	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Prophylactic vaccines
STG 1988	Policy planning	Alternatives to surgical abortion such as combination of antiprogestins and prostaglandins	N/A	Treatment and management of symptoms and disease	XV - pregnancy	drugs (not prophylactic vaccines)
STG 1988	Policy planning	Treatment of infertility using new technologies such as in vitro fertilization, surrogate motherhood, freezing of germ cells and embro with embryo transfer	N/A	Treatment and management of symptoms and disease	XIV - genitourina ry	Other
STG 1988	Policy planning	Fetal cells can be isolated from the mother's bloodstream as a method for prenatal screening	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Diagnostic tests and imaging

STG 1988	Policy	Metabolic,	N/A	Diagnosis and	Other -	Diagnostic tests
	planning	physiologic information can be obtained by spectroscopy		monitoring of disease	generic	and imaging
STG 1988	Policy planning	Data from CT scanner will be stored on a disk, transmit by a phone line or othe communication	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Film may disappear and computer will directly interpret the diagnosis	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Biosensors to monitor disease condition or results of therapy (e.g. diabetes)	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Tumor markers that can be measured in blood	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Flow cytometer will be used in transplantation or monitoring of cancer therapy	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Monoclonal antibodies for diagnosis such as colon cancer and area of cardiac infarctions	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Human gene therapy for a wide variety of diseases including cancer, diabetes, cardiovascular and affective disorders such as depression	N/A	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
STG 1988	Policy planning	DNA probe for intra-uterine diagnosis of genetic diseases	N/A	Diagnosis and monitoring of disease	XVII - congenital	Diagnostic tests and imaging
STG 1988	Policy planning	Home diagnostic kits for sexually	7	Diagnosis and monitoring of	I - infections	Organisational programmes

		transmitted diseases and hepatitits		disease		
STG 1988	Policy planning	Home diagnostic kits for screening for cancer	7	Diagnosis and monitoring of disease	I - infections	Organisational programmes
STG 1988	Policy planning	Home diagnostic kits to test for common diseases with genetic basis such as diabetes	N/A	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
STG 1988	Policy planning	Genetic insertion therapy for treatment of certain blood disorders such as thalassaemia and sickle cell anaemia	N/A	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
STG 1988	Policy planning	Oral treatment forms for hormones, enzymes and other peptides may be developed	N/A	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for asthma	N/A	Treatment and management of symptoms and disease	X - respiratory	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for coronary artery diseases	N/A	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Monoclonal antibodies to replace immune globulins	N/A	Treatment and management of symptoms and disease	III - blood	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Cloning of skin	N/A	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
STG 1988	Policy planning	Growth of retinal tissue and corneal endothelium	N/A	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
STG 1988	Policy planning	Total body irradiation for transplant (to prevent rejection)	N/A	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
STG 1988	Policy planning	Artificial heart	N/A	Treatment and management of symptoms and	IX - circulation	Regenerative medicine

				disease		
STG 1988	Policy planning	Artificial pancreas	N/A	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
STG 1988	Policy planning	Shoulder joint replacement	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Cochlear implants	N/A	Treatment and management of symptoms and disease	VIII - ear	Devices and biomaterials
STG 1988	Policy planning	Coating of implant materials to improve acceptability	N/A	Other	Other - generic	Devices and biomaterials
STG 1988	Policy planning	Functional electrical stimulation in prosthetics allowing brain to control the action	N/A	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
STG 1988	Policy planning	Prostheic fingers	N/A	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Organ transplant and improvement of functional activities of organs (pancreas, bone, small bowel, endocine glands)	N/A	Treatment and management of symptoms and disease	Other - generic	Other
STG 1988	Policy planning	Microprocessor to restore damaged areas of the brain	N/A	Rehabilitation	VI - nervous	Devices and biomaterials
STG 1988	Policy planning	Laser cytofluorometry will be used to identify RNA and DNA in the plasma	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser doppler to measure blood flow in the retina	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser to stop gastrointestinal bleeding	N/A	Treatment and management of symptoms and disease	XI - GI tract, dental health	Therapeutic procedures

STG 1988	Policy	Laser to break	N/A	Treatment and	XIV -	Therapeutic
310 1300			IN/A			procedures
	planning	urinary stones		management of	genitourina	procedures
				symptoms and disease	ry	
STG 1988	Policy	Laser surgery	N/A	Treatment and	Other -	Therapeutic
	planning	through		management of	generic	procedures
		endoscope		symptoms and		
				disease		
STG 1988	Policy	Widespread use	N/A	Treatment and	Other -	Therapeutic
	planning	of microsurgery		management of	generic	procedures
				symptoms and		
				disease		
STG 1988	Policy	Electronic gas	N/A	Supporting the	XIX - injury	Medical equipment
	planning	valve regulator for		provision of care		
		safety in		and/or increasing		
		anaesthaesia		service efficiency		
STG 1988	Policy	Instantaneous	N/A	Supporting	XIX - injury	Diagnostic tests
	planning	measurement of		patients receiving		and imaging
		blood gases and		care (designed to		
		drug levels in the		be used by		
		body during		individuals)		
		anasthaesia				
STG 1988	Policy	Computerised	N/A	Supporting the	Other -	IT systems, eHealth
	planning	ECG operating		provision of care	generic	and mHealth
		room		and/or increasing		
				service efficiency		
STG 1988	Policy	Data on each	N/A	Supporting	Other -	IT systems, eHealth
	planning	patient available		patients receiving	generic	and mHealth
		at any moment		care (designed to		
		during the		be used by		
		operation		individuals)		
STG 1988	Policy	Computerised	N/A	Supporting	Other -	IT systems, eHealth
	planning	electroanaesthesi		patients receiving	generic	and mHealth
		a		care (designed to		
				be used by		
				individuals)		
STG 1988	Policy	New methods to	N/A	Treatment and	Other -	Devices and
	planning	close wounds e.g.		management of	generic	biomaterials
		tissue glue with		symptoms and		
		ultrasound		disease		
STG 1988	Policy	Spectroscopy	N/A	Diagnosis and	XI - GI tract,	Diagnostic tests
	planning	using optical		monitoring of	dental	and imaging
		methods to		disease	health	
		diagnose caries				
STG 1988	Policy	Bone like implants	N/A	Treatment and	XI - GI tract,	Devices and
	planning	for teeth and		management of	dental	biomaterials
		bones		symptoms and	health	
				disease		
STG 1988	Policy	Home monitoring	N/A	Supporting	Other -	IT systems, eHealth
	planning	especially of the		patients receiving	generic	and mHealth
		elderly		care (designed to		

				be used by individuals)		
STG 1988	Policy planning	Networks for communications between and within hospitals	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Huge mass memories (e.g. on laser disc) for the storage of medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Video disk oriented data base for medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Computer aided examination and testing	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Improved biomaterials for joint implants and plastic surgery	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Improved materials for artificial blood vessels	N/A	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Cahill et al Technology Map 1999	policy planning	Therapeutics for arterial occlusion and myocardial infarction	4	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	Policy planning	Guidelines for adult disease preventing life style	8	Supporting the provision of care and/or increasing service efficiency	XXI - screening, rehab	Organisational programmes
Cahill et al Technology Map 1999	policy planning	Development of anti-cancer agents (gene level)	11	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	policy planning	drugs preventing the occurrence of cancer	12	Health promotion and prevention of disease	II - cancers	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	policy planning	Effective means to prevent metastasis	15	Health promotion and prevention of disease	II - cancers	Unknown
Cahill et al Technology Map 1999	policy planning	Genetic/biochemi cal tests for schizophrenia and depression	9	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging

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Food and Drug	Policy	Biosensors	10	Unknown	Other -	Diagnostic tests
Administration	planning				generic	and imaging
(FDA) surveys						
1998						
Food and Drug	Policy	Laser diagnosis	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning			monitoring of	generic	and imaging
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Tissue engineered	10	Treatment and	Other -	Devices and
Administration	planning	devices		management of	generic	biomaterials
(FDA) surveys				symptoms and	0	
1998				disease		
Food and Drug	Policy	Blood vessel	10	Treatment and	IX -	Regenerative
Administration	planning	prosthetics	10	management of	circulation	medicine
(FDA) surveys	planning	prostricties		symptoms and	Circulation	medicine
1998				disease		
	Policy	Pana prosthatics/	10		XIII -	Pogoporativo
Food and Drug Administration	•	Bone prosthetics/	10	Treatment and	musculoske	Regenerative medicine
	planning	growth		management of		medicine
(FDA) surveys				symptoms and	letal	
1998			10	disease		
Food and Drug	Policy	Cardiac	10	Treatment and	IX -	Unknown
Administration	planning	stimulation		management of	circulation	
(FDA) surveys				symptoms and		
1998				disease		
Food and Drug	Policy	cartilage	10	Treatment and	XIII -	Devices and
Administration	planning	prosthetics		management of	musculoske	biomaterials
(FDA) surveys				symptoms and	letal	
1998				disease		
Food and Drug	Policy	Computer aided	10	Diagnosis and	Other -	IT systems, eHealth
Administration	planning	clinical labs		monitoring of	generic	and mHealth
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Computer aided	10	Supporting the	Other -	IT systems, eHealth
Administration	planning	diagnosis		provision of care	generic	and mHealth
(FDA) surveys				and/or increasing	0	
1998				service efficiency		
Food and Drug	Policy	Telemedicine	10	Supporting	Other -	IT systems, eHealth
Administration	planning	. Sienie Grenie		patients receiving	generic	and mHealth
(FDA) surveys	Pidiming			care (designed to	generic	
1998				be used by		
1336				individuals)		
Food and Drug	Policy	Drug impregnated	10	Treatment and	Other -	Devices and
Administration	•	devices	10			biomaterials
	planning	uevices		management of	generic	טוטווומנפוומוט
(FDA) surveys				symptoms and		
1998	Dalia.	Fordance:	10	disease	Other	Diamanticles
Food and Drug	Policy	Endoscopy	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning			monitoring of	generic	and imaging
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Hearing	10	Rehabilitation	VIII - ear	Devices and
Administration	planning	aids/Nonimplante				biomaterials

(FDA) surveys 1998		d sensory aids				
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart valves	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart pumps	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Home diagnostics /Home/self monitoring & diagnosis	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Organisational programmes
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image contrast agents	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Integrated patient medical info systems	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser treatment	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	kidney prosthetics	10	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser surgery	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Liver prosthetics	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive neurosurgery	10	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive cardiac surgery	10	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	MRI	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Food and Drug Administration (FDA) surveys 1998	Policy planning	Neuromuscular stimulation	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Nerve regeneration	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Neural stimulation	10	Treatment and management of symptoms and disease	VI - nervous	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Ocular prosthetics	10	Treatment and management of symptoms and disease	VII - eye	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Pancreas prosthetics	10	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Patient smart cards	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Robotic surgery	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Skin prosthetics	10	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Telemedicine- home use	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Telemedicine- radiology	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 2008	Policy planning	Robotic surgical systems	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Point-of-care products	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Food and Drug	Policy	Computer-	10	Diagnosis and	Other -	IT systems, eHealth
Administration	planning	assisted		monitoring of	generic	and mHealth
(FDA) surveys		diagnostic		disease		
1998		systems				
Food and Drug	Policy	Neuro-sensory	10	Diagnosis and	VI -	Devices and
Administration	planning	devices		monitoring of	nervous	biomaterials
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Optical diagnostic	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning	products		monitoring of	generic	and imaging
(FDA) surveys				disease		
1998	5 !!		4.0		0.1	
Food and Drug	Policy	Integrated	10	Supporting the	Other -	IT systems, eHealth
Administration	planning	electronic patient		provision of care	generic	and mHealth
(FDA) surveys		medical records		and/or increasing		
1998	Dalia	Damata matiant	10	service efficiency	Other	IT as at a man and a solution
Food and Drug Administration	Policy	Remote patient	10	Supporting	Other -	IT systems, eHealth and mHealth
	planning	monitoring		patients receiving care (designed to	generic	and mnealth
(FDA) surveys 1998		systems		be used by		
1996				individuals)		
Food and Drug	Policy	Glucose	10	Diagnosis and	IV -	Diagnostic tests
Administration	planning	monitoring		monitoring of	endocrine	and imaging
(FDA) surveys	piarining	products		disease	Cridocrine	ana magmg
1998		products	5	u.sease		
Food and Drug	Policy	Tissue engineered	10	Treatment and	Other -	Regenerative
Administration	planning	products		management of	generic	medicine
(FDA) surveys				symptoms and		
1998				disease		
Food and Drug	Policy	Advanced	10	Rehabilitation	XIII -	Devices and
Administration	planning	prosthetic limbs			musculoske	biomaterials
(FDA) surveys					letal	
1998						
Food and Drug	Policy	Minimally invasive	10	Treatment and	Other -	Devices and
Administration	planning	implants (e.g.,		management of	generic	biomaterials
(FDA) surveys		percutaneous or		symptoms and		
1998		natural orifice		disease		
5 1 15	5 1:	delivery)	4.0		0.1	· · · · · · · · · · · · · · · · · · · ·
Food and Drug	Policy	Virtual reality	10	Unknown	Other -	IT systems, eHealth
Administration	planning	systems for			generic	and mHealth
(FDA) surveys		immersive				
1998		training and other				
Food and Drug	Policy	applications	10	Treatment and	Other -	Devices and
Food and Drug Administration	planning	Optical therapeutic	10	management of		biomaterials
(FDA) surveys	hiaillilig	devices		symptoms and	generic	טוטווומנפוומוט
1998		acvices		disease		
Food and Drug	Policy	Internet-based	10	Supporting	Other -	IT systems, eHealth
Administration	planning	medical device		patients receiving	generic	and mHealth
(FDA) surveys		systems		care (designed to	3=	
1998		,		be used by		
1	1	1	1		I .	

				individuals)		
Food and Drug Administration (FDA) surveys 1998	Policy planning	New (non-eluting) drug delivery systems	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Food and Drug Administration (FDA) surveys 1998	Policy planning	Robotic prosthetics	20	Rehabilitation	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of insulin pumps and delivery systems	20	Treatment and management of symptoms and disease	IV - endocrine	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of stents	20	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Joint replacements	20	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image-guided therapy systems	20	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced ultrasound imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced optical imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced MR imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Minimally invasive radiotherapy systems	20	Treatment and management of symptoms and disease	II - cancers	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Genetic diagnostic products	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Remote patient monitoring systems	20	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
Institute of the Future, 2009	Research	Bio-marker based tools will screen for future disease risk and produce new diagnoses based on probabilities	11	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	Visualizations improve diet & exercise	11	Health promotion and prevention of disease	Other - generic	Non-surgical therapy
Institute of the Future, 2009	Research	GPS-enabled asthma inhalers	11	Supporting the provision of care and/or increasing service efficiency	X - respiratory	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Workplace clinics	11	Health promotion and prevention of disease	Other - generic	Organisational programmes
Institute of the Future, 2009	Research	Urban planning for walkability, pollution reduction, neighbourood food systems	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Report cards include Body Mass Index (BMI) scores	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	iPhone-synched medical devices	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Quantifying, visualizing, and mapping health implications of environments	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Deep brain stimulation used for neurological, behavioral issues	11	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
Institute of the Future, 2009	Research	Home sensors for elder care	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Individually targeted therapies	11	Treatment and management of symptoms and	Other - generic	Drugs (not prophylactic vaccines)

				disease		
Institute of the Future, 2009	Research	Sensors track drug efficacy	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Institute of the Future, 2009	Research	Genotypic diagnostics and	11	Diagnosis and monitoring of	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	risk New technologies enable individuals to experience the future effects of present-day behavior choices	11	Treatment and management of symptoms and disease	Other - generic	Unknown
Institute of the Future, 2009	Research	Regenerative medicine (general)will replace, restore, maintain, or enhance tissue and organ functions	11	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Institute of the Future, 2009	Research	New ways of reliably measuring subjective states such as happiness, anxiety, or pain, and finding the neural correlates of personality and behavioral patterns	11	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
Institute of the Future, 2009	Research	prototype of a prosthetic arm that can be controlled naturally and provide sensory feedback.	11	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
Stevens et al 1997	Research	Magnetic resonance imaging	1	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Minimally invasive surgery	1	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Stevens et al 1997	Research	drugs for Therapeutic refractory	1	Treatment and management of symptoms and	V - mental health	Drugs (not prophylactic vaccines)

		schizphrenia		disease		
Stevens et al 1997	Research	Implantable vascular stents	1	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Stevens et al 1997	Research	Peripheral blood stem cells transplantation	1	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Laser Therapeutic of benign prostatic hyperplasia	1	Treatment and management of symptoms and disease	XIV - genitourina ry	Non-surgical therapy
Stevens et al 1997	Research	Gene therapy advances	4	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Polymerase chain reaction	4	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Telemedicine	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Interventional radiology	1	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Stevens et al 1997	Research	Angioplasty	1	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Stevens et al 1997	Research	Interferon for chronic granulocytic leukemia	1	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Interferon for hepatitis C	1	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Lasers for dermatology	1	Treatment and management of symptoms and disease	XII - skin	Devices and biomaterials
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

Stevens et al	Research	Near patient	2	Diagnosis and	Other -	Diagnostic tests
1997	Research	1	2	monitoring of		and imaging
1997		testing		disease	generic	and imaging
Charren at al	Danasask	Davidson of inite	4		VIII	The area and in
Stevens et al	Research	Revision of joint	1	Treatment and	XIII -	Therapeutic
1997		replacement		management of	musculoske	procedures
				symptoms and	letal	
				disease		
Stevens et al	Research	Genetic screening	4	Diagnosis and	Other -	Diagnostic tests
1997				monitoring of	generic	and imaging
				disease		
Stevens et al	Research	Helicobactor	1	Treatment and	1-	Drugs (not
1997		pylori eradication		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Positron emission	4	Diagnosis and	Other -	Diagnostic tests
1997		tomography		monitoring of	generic	and imaging
		,,		disease	80	
Stevens et al	Research	Phacoemulsificati	1	Treatment and	VII - eye	Therapeutic
1997	The Section	on	_	management of	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	procedures
1337				symptoms and		procedures
				disease		
Stevens et al	Research	Cochlear implants	1	Rehabilitation	VIII - ear	Devices and
1997	Research	Cocineal implants	1	Reliabilitation	VIII - Cai	biomaterials
	Dosooreh	Paclitaxels for	2	Treatment and	II cancore	
Stevens et al	Research		2	Treatment and	II - cancers	Drugs (not
1997		ovarian & breast		management of		prophylactic
		cancer		symptoms and		vaccines)
				disease		
Stevens et al	Research	Bone	1	Diagnosis and	XIII -	Diagnostic tests
1997		densitometry		monitoring of	musculoske	and imaging
		screening		disease	letal	
Stevens et al	Research	Anticoagulants for	1	Health promotion	IX -	Drugs (not
1997		atrial fibrillation		and prevention of	circulation	prophylactic
				disease		vaccines)
Stevens et al	Research	Picture archiving	4	Supporting the	Other -	IT systems, eHealth
1997		and		provision of care	generic	and mHealth
		communication		and/or increasing		
		system		service efficiency		
Stevens et al	Research	rhDNase	2	Treatment and	IV -	Drugs (not
1997				management of	endocrine	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Biomaterials in	2	Treatment and	XIII -	Devices and
1997	nescaren	bone and joint	_	management of	musculoske	biomaterials
1337		replacement		symptoms and	letal	Siomaterials
		Теріассіпені		disease	ictai	
Stevens et al	Research	Increased use of	2	Treatment and	II - cancers	Drugs (not
1997	Nescarcii	adjuvant		management of	n - cancers	prophylactic
1331		chemotherapy in		_		vaccines)
				symptoms and		vaccinesj
Charrent at all	Decarate	colorectal cancer	1	disease	111 - 141 - 2 - 3	Dwygo /+
Stevens et al	Research	Increased use of	2	Treatment and	III - blood	Drugs (not
1997		high purity factor		management of		prophylactic

		VIII and recombinant factor VIII in hemophilia		symptoms and disease		vaccines)
Stevens et al 1997	Research	Mirena intrauterine contraceptive device	2	Health promotion and prevention of disease	XIV - genitourina ry	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	drugs for Alzheimer's disease	6	Treatment and management of symptoms and disease	V - mental health	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Xenotransplantati on	6	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Screening for abdominal aortic aneurysm	6	Health promotion and prevention of disease	IX - circulation	Population programmes
Stevens et al 1997	Research	Remotely controlled robots (laboratory)	6	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Stevens et al 1997	Research	Gene therapy for cystic fibrosis	6	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
Stevens et al 1997	Research	New anesthetic vapors	2	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Magnetic resonance angiography	4	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
Stevens et al 1997	Research	Digital radiography	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Alendronate for osteoporosis	2	Treatment and management of symptoms and disease	XIII - musculoske letal	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Continuous positive airways pressure	1	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy

Stevens et al 1997	Research	Expanding metal stents for esophageal cancer	1	Treatment and management of symptoms and disease	II - cancers	Devices and biomaterials
Stevens et al 1997	Research	Community placements for severe mental illness	1	Supporting patients receiving care (designed to be used by individuals)	V - mental health	Organisational programmes
Stevens et al 1997	Research	Fludarabine in lymphomas and chronic leukemias	2	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Combined therapy for HIV/AIDS	2	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Epilepsy surgery	1	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
Stevens et al 1997	Research	Lipid-lowering drugs for elevated cholesterol	1	Health promotion and prevention of disease	IX - circulation	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Repair of abdominal aortic aneurysm with transfemoral endovasculate (bifurcated) graft	4	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Stevens et al 1997	Research	Intracytoplasmatic sperm injection	2	Treatment and management of symptoms and disease	XIV - genitourina ry	Therapeutic procedures
Stevens et al 1997	Research	Computed tomography (CT) scan advances	2	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Voice activated dictation technology	1	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Stevens et al 1997	Research	Intra-arterial metallic stents	1	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Hand-held robotic and remote ultrasound	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	MRI guided catheterization	14	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging

Policy P	Tremblay and Yiu,	Policy	Image-guided	14	Treatment and	Other -	Therapeutic
Surgery and robotics Symptoms and disease Symptoms and disease Diagnosis and monitoring of disease Name	•			14			
rremblay and Yiu, 2006 rremblay and Yiu, 2007 rremblay and Yiu, 2008 rremblay and Yiu, 2009 rrembl	2000	piariring	• •		_	generic	procedures
Tremblay and Yiu, 2006 Policy planning Tromography Computed Tromography Policy planning Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning Tremblay and			• .				
Policy planning Policy pla	Tremblay and Yiu	Policy		14		XI - GI tract	Diagnostic tests
Colonography Digital Dignostic and Dignostic tests Dignostic and Dignostic tests Dignostic and		,	· ·	- '	_	· ·	_
Tremblay and Yiu, 2006 Policy planning Policy		, p.s	<u> </u>		_		
Tremblay and Yiu, 2006 Policy planning Poli	Tremblay and Yiu.	Policy	<u> </u>	14			Diagnostic tests
Tremblay and Yiu, 2006 Trembl			_		_		_
Tremblay and Yiu, 2006 Trembl		J	,		_	8-11-11-1	
Planning Imaging Monitoring of disease Supporting the provision of care and/or increasing processing Supporting the provision of care and/or increasing service efficiency	Tremblay and Yiu,	Policy	Molecular-level	14	Diagnosis and	Other -	Diagnostic tests
Tremblay and Yiu, 2006 Policy planning Pol	•	planning	imaging		monitoring of	generic	and imaging
2006 planning scanners with improved image processing service efficiency Tremblay and Yiu, 2006 planning Policy planning Tremblay and Yiu, 2006 Planning Policy planning Tremblay and Yiu, 2006 Planning Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Planning Policy Po					disease		
Tremblay and Yiu, 2006 Trembl	Tremblay and Yiu,	Policy	More economical	14	Supporting the	Other -	Medical equipment
Tremblay and Yiu, 2006 Trembl	2006	planning	scanners with		provision of care	generic	
Tremblay and Yiu, 2006 Trembl			improved image		and/or increasing		
Policy planning Policy pla			processing		service efficiency		
Tremblay and Yiu, 2006 Trembl	-	· ·	4D imaging	14		Other -	_
Tremblay and Yiu, 2006 Trembl	2006	planning			monitoring of	generic	and imaging
2006 planning to capture an image and general reduction in scan times Tremblay and Yiu, 2006 Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy							
image and general reduction in scan times Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay an	•			14		Other -	Medical equipment
Tremblay and Yiu, 2006 Trembl	2006	planning			· •	generic	
Tremblay and Yiu, 2006 Policy planning procedures Tremblay and Yiu, 2006 Policy planning planning procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning planni					_		
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Tremblay and Yiu, 2006 Trembl	2006	pianning	J ,		_	generic	and imaging
Tremblay and Yiu, 2006 Trembl					disease		
2006 planning surgery for early detection of coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy Po	Trambley and Viv	Doling	• •	1.4	Diagnosis and	IV	Diagnostic tosts
detection of coronary heart diseases Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy	-	7		14	-		_
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy planning Plan	2000	piaiiiiig				Circulation	and imaging
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Policy planning Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Policy planning Policy Policy Planning Policy Planning Policy Planning Policy Planning Planning Policy Planning Planning Planning Planning Planning Planning Planning Plan					uisease		
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning Health monitoring of disease Tremblay and Yiu, 2006			•				
2006 planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy platform Policy platform Policy Poli	Tremblay and Yiu	Policy		14	Diagnosis and	Other -	Diagnostic tests
Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 3000 Tremblay and Yiu, 4000 Trembl	•						_
Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 2016 Tremblay and Y						5	
Imaging of inflammation Tremblay and Yiu, 2006 Tremb							
Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning health monitoring health monitoring patients receiving care (designed to be used by individuals) Tremblay and Yiu, 2006 Policy planning diagnostic platform Tremblay and Yiu, Policy Hand-held gamma 14 Supporting patients receiving care (designed to be used by individuals) Supporting patients receiving patients receiving care (designed to be used by individuals) Total Care (designed to be used by individuals) Total Care (designed to be used by individuals) Tremblay and Yiu, Policy Fehealth Supporting the provision of care and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests			Imaging of				
2006 planning health monitoring patients receiving care (designed to be used by individuals) Tremblay and Yiu, 2006 planning planning diagnostic platform platform platform platform service efficiency Policy planning diagnostic platform service efficiency planning service and other - Diagnostic tests Diagnostic tests							
Care (designed to be used by individuals) Tremblay and Yiu, Policy Planning diagnostic platform Policy Planding Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	Tremblay and Yiu,	Policy	Wireless home-	14	Supporting	Other -	IT systems, eHealth
be used by individuals) Tremblay and Yiu, Policy planning diagnostic platform Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	2006	planning	health monitoring		patients receiving	generic	and mHealth
Tremblay and Yiu, Policy E-health diagnostic platform platform service efficiency Tremblay and Yiu, Policy Planning Diagnostic platform service efficiency Planning Service efficiency Planning Service efficiency Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests					care (designed to		
Tremblay and Yiu, 2006 Policy planning diagnostic platform Tremblay and Yiu, Policy Policy planning diagnostic platform Policy planning diagnostic platform Diagnosis and Piu, Policy Policy E-health diagnostic provision of care and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests					be used by		
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Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	2006	planning	_		l '	generic	and mHealth
Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests			platform		_		
					•		
THE INCOME I ADDRESS I DESCRIPTION I DESCRIPTION I TOUR TOUR TOUR TOUR TOUR TOUR TOUR TOUR	•		_	14	_		_
2006 pianning camera monitoring of generic and imaging	2006	planning	camera		monitoring of	generic	and imaging

				disease		
Tremblay and Yiu, 2006	Policy planning	"one-stop" diagnosis and Therapeutic	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	customised hybrid systems for specific clinical situations	14	Unknown	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	Near Infra-red Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Spatially-resolved Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Optical Coherence Tomography	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Capsule Endoscopy	14	Diagnosis and monitoring of disease	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Tele-echography	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Tele-colposcopy	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Electronic Nose	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	New contrast agents for Rubidium	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised gases	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Terahertz waves	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Microwaves, light spectrum	14	Unknown	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised imaging	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Specific advances in MRI, Ultrasound, Radiographyetc	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Tremblay and Yiu,	Policy	Reduction in use	14	Supporting the	Other -	Organisational
2006	planning	of invasive		provision of care	generic	programmes
		diagnostic		and/or increasing		
		procedures		service efficiency		
Tremblay and Yiu,	Policy	Diagnosis of	14	Diagnosis and	XIV -	Unknown
2006	planning	kidney disorders		monitoring of	genitourina	
		without renal		disease	ry	
		biopsy				
Tremblay and Yiu,	Policy	Ex vivo molecular-	14	Diagnosis and	Other -	IT systems, eHealth
2006	planning	computer		monitoring of	generic	and mHealth
		diagnosis		disease		
Tremblay and Yiu,	Policy	Smart-drug	14	Treatment and	Other -	Devices and
2006	planning	delivery systems		management of	generic	biomaterials
		, ,		symptoms and		
				disease		
Tremblay and Yiu,	Policy	Polymer-	9	Diagnosis and	Other -	Diagnostic tests
2006	planning	encapsulated,		monitoring of	generic	and imaging
	1-119	bioconjugated		disease	30	
		quantum dots		discuse		
Tremblay and Yiu,	Policy	Patient accessed	4	Supporting the	Other -	Organisational
2006	planning	universal health		provision of care	generic	programmes
2000	Pidililing	records		and/or increasing	generic	programmes
		records		service efficiency		
Tremblay and Yiu,	Policy	In silico-in vivo	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	integration (lab	14	monitoring of	generic	and imaging
2000	planning	on-a-chip)		disease	generic	and imaging
Tremblay and Yiu,	Policy	Wide deployment	9	Supporting the	Other -	Devices and
2006	planning	of non-invasive		provision of care		biomaterials
2000	piariring	technologies and		and/or increasing	generic	Diomaterials
		biosensors		service efficiency		
Tromblay and Viv	Policy		6	Supporting	Other -	Organicational
Tremblay and Yiu,	,	Direct consumer	0			Organisational
2006	planning	access to		patients receiving	generic	programmes
		diagnostic tests		care (designed to		
				be used by		
T 11 120	D 1:			individuals)	0.1	5
Tremblay and Yiu,	Policy	Molecular imaging	9	Diagnosis and	Other -	Diagnostic tests
2006	planning	with single		monitoring of	generic	and imaging
		molecular		disease		
— 1.1	5 !:	pecision	_		0.11	<u> </u>
Tremblay and Yiu,	Policy	diagnostic testing	7	Supporting the	Other -	Diagnostic tests
2006	planning	throughout the		provision of care	generic	and imaging
		care pathway		and/or increasing		
	2 11			service efficiency		
Tremblay and Yiu,	Policy	Neuro-imaging at	14	Diagnosis and	VI -	Diagnostic tests
2006	planning	cellular level of		monitoring of	nervous	and imaging
		brain processes		disease		
		(thoughts)				
Tremblay and Yiu,	Policy	Molecular-	14	Other	Other -	Drugs (not
2006	planning	computers used			generic	prophylactic
		to design smart				vaccines)
		therapies				

Tremblay and Yiu,	Policy	Remote internet	9	Supporting	Other -	IT systems, eHealth
2006	planning	diagnosis based		patients receiving	generic	and mHealth
		on data received		care (designed to		
		from patient's		be used by		
		home		individuals)		
Tremblay and Yiu,	Policy	Molecular	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	diagnosis		monitoring of	generic	and imaging
				disease		
Tremblay and Yiu,	Policy	diagnostic -guided	14	Treatment and	Other -	Drugs (not
2006	planning	therapy for		management of	generic	prophylactic
		individualised		symptoms and		vaccines)
		medicine		disease		
Tremblay and Yiu,	Policy	Computer-	14	Diagnosis and	Other -	IT systems, eHealth
2006	planning	assisted diagnosis		monitoring of	generic	and mHealth
		with pattern		disease		
		recognition				
Tremblay and Yiu,	Policy	Self-propelled	9	Unknown	Other -	Devices and
2006	planning	micro-machines			generic	biomaterials
		for diagnosis and				
		Therapeutic				
Tremblay and Yiu,	Policy	diagnostic bio-	9	Diagnosis and	II - cancers	Diagnostic tests
2006	planning	chip for cancer		monitoring of		and imaging
				disease		
Tremblay and Yiu,	Policy	Investigation of	14	Diagnosis and	IX -	Devices and
2006	planning	thrombosis and		monitoring of	circulation	biomaterials
		vascular		disease		
		pathology using				
		3D tomography				
		with remote				
		controlled micro-				
- 11 12	D 1:	instruments	40		0.1	
Tremblay and Yiu,	Policy	Personal care	12	Supporting	Other -	Medical equipment
2006	planning	nurse-robots		patients receiving	generic	
				care (designed to		
				be used by		
T 1.1.	D. P.	E	4.4	individuals)	0.11	D'a a a a a l'a la a la
Tremblay and Yiu,	Policy	Functional	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	combination of		monitoring of	generic	and imaging
		targeting and		disease		
Tromblevered Viv	Polic:	imaging	1.4	Cupporting the	Othor	Organisational
Tremblay and Yiu,	Policy	Intelligent and	14	Supporting the	Other -	Organisational
2006	planning	context sensitive		provision of care	generic	programmes
		clinical systems		and/or increasing service efficiency		
Tremblay and Yiu,	Policy	Personal access to	14	Supporting	Other -	Unknown
2006	planning	genomic	14	patients receiving	generic	GIINIIOWII
2000	Pigilling	information		care (designed to	generic	
		inionnation		be used by		
				individuals)		
Tremblay and Yiu,	Policy	Development of	9	Treatment and	Other -	Regenerative
2006	planning	effective gene		management of	generic	medicine
2000	Piailillig	Checuve gene		management of	generic	medicine

		therapies		symptoms and disease		
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of scientific guidelines for adult-disease-preventing lifestyles (nutrition, rest and exercise)	9	Health promotion and prevention of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of chemotherapy that brings complete remission to digestive organ cancer with low drug-responsiveness	18	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of techniques to overcome the drug resistance of malignant tumours	16	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of drugs that cure viral liver disease	13	Treatment and management of symptoms and disease	XI - GI tract, dental health	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of biological and immunological therapy effective for cancer	14	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective methods of preventing Alzheimer's disease	16	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Possible to cure allergic diseases	21	Treatment and management of symptoms and disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an HIV vaccine	10	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of gene therapy against malignant tumors	17	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of prevention methods for the contraction of diabetic complications	11	Health promotion and prevention of disease	IV - endocrine	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of anti-AIDS therapy	12	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of an early cancer diagnosis technique based on biochemical examination	10	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to eliminate viruses from blood	12	Treatment and management of symptoms and disease	I - infections	Therapeutic procedures
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of prevention methods for stress-induced mental disorders	14	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a method to quantitatively assess the level of aging (biological age) in relation to chronological age.	9	Diagnosis and monitoring of disease	Other - generic	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a preventive measure against diabetic complications.	14	Health promotion and prevention of disease	IV - endocrine	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of presbyopia prevention methods	29	Health promotion and prevention of disease	VII - eye	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a laser-applied tooth decay treatment method	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread method of prevention against a premature delivery through	8	Health promotion and prevention of disease	XV - pregnancy	Organisational programmes

	1	Γ		T		T
		the progression of				
		management				
		system of fetal				
		information.				
Science &	Policy	Practical use of	19	Health promotion	XV -	Unknown
Technology	planning	the prevention		and prevention of	pregnancy	
Foresight survey		against congenital		disease	,	
Japan 1997		anomaly				
		originating in the				
		embryonic or fetal				
		period.				
Science &	Policy	Widespread use	19	Health promotion	VI -	Unknown
Technology	planning	of preventive	13	and prevention of	nervous	OTIKITOWIT
Foresight survey	planning	measure for		disease	ner vous	
- '				uisease		
Japan 1997	D. II.	cerebral palsy	_	D'accession and		D'acception and
Science &	Policy	Widespread use	7	Diagnosis and	II - cancers	Diagnostic tests
Technology	planning	of a cancer spread		monitoring of		and imaging
Foresight survey		diagnosis		disease		
Japan 1997		technique based				
		on 3-D imaging.				
Science &	Policy	Widespread use	11	Diagnosis and	II - cancers	Unknown
Technology	planning	of a cancer risk		monitoring of		
Foresight survey		assessment		disease		
Japan 1997		technique based				
		on genetic				
		analysis.				
Science &	Policy	Widespread use	9	Unknown	II - cancers	Unknown
Technology	planning	of against of				
Foresight survey		cancer cells drug				
Japan 1997		sensitivity				
·		measurement				
		method.				
Science &	Policy	Widespread use	9	Diagnosis and	II - cancers	Diagnostic tests
Technology	planning	of automatic		monitoring of		and imaging
Foresight survey	, p	testing equipment		disease		
Japan 1997		for cancer		discuse		
3apan 1337		cytodiagnosis.				
Science &	Policy	Practical use of	24	Diagnosis and	V - mental	Diagnostic tests
Technology	planning	classification and	24	monitoring of	health	and imaging
Foresight survey	piaiiiiiig	stage		disease	Health	and imaging
,		determination of		uisease		
Japan 1997						
		schizophrenia				
		based on				
		diagnostic				
		imaging.				
Science &	Policy	Practical use of	9	Diagnosis and	IX -	Diagnostic tests
Technology	planning	diagnosing		monitoring of	circulation	and imaging
Foresight survey		methods for		disease		
Japan 1997		determining the				
		level and spread				
		of arteriosclerosis				

		focused by a non- invasive process				
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of a correct diagnostic measure for kidney diseases without renal biopsy.	19	Diagnosis and monitoring of disease	XIV - genitourina ry	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a capsule-type total gastro-intestinal tract monitoring system.	6	Diagnosis and monitoring of disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of specialist-level medical diagnosis assistance systems.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of non-invasive cell-level diagnostic imaging.	8	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a non-invasive technique to obtain blood biochemical examination data using body surface sensors.	9	Diagnosis and monitoring of disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation.	6	Diagnosis and monitoring of disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of malaria vaccines.	10	Health promotion and prevention of disease	infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an effective insulin that can be administered orally.	16	Treatment and management of symptoms and disease	IV - endocrine	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of gene therapy for diabetes.	16	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine

Science &	Policy	Widespread use	14	Treatment and	IX -	Regenerative
Technology	planning	of gene therapy		management of	circulation	medicine
Foresight survey		for familial		symptoms and		
Japan 1997		hypercholesterole		disease		
		mia.				
Science &	Policy	Development of	8	Treatment and	II - cancers	Therapeutic
Technology	planning	radiosensitizers		management of		procedures
Foresight survey		effective in cancer		symptoms and		
Japan 1997		treatment.		disease		
Science &	Policy	Widespread use	14	Treatment and	II - cancers	Non-surgical
Technology	planning	of heavy particle		management of		therapy
Foresight survey		against cancer		symptoms and		
Japan 1997				disease		
Science &	Policy	Development of a	19	Treatment and	Other -	Drugs (not
Technology	planning	technique to		management of	generic	prophylactic
Foresight survey		cause drug		symptoms and		vaccines)
Japan 1997		delivery to		disease		
		targeted sites in				
		the brain.				
Science &	Policy	Practical use of a	12	Treatment and	Other -	Unknown
Technology	planning	safe pain control		management of	generic	
Foresight survey		method without		symptoms and		
Japan 1997		side effects		disease		
Science &	Policy	Widespread use	24	Treatment and	VI -	Regenerative
Technology	planning	of gene therapy		management of	nervous	medicine
Foresight survey		for muscular		symptoms and		
Japan 1997		dystrophy.		disease		
Science &	Policy	Development of	31	Treatment and	VI -	Unknown
Technology	planning	effective		management of	nervous	
Foresight survey		treatment for		symptoms and		
Japan 1997		amyotrophic		disease		
		lateral sclerosis.				
Science &	Policy	Practical use of	21	Rehabilitation	XXI -	Devices and
Technology	planning	artificial muscles			screening,	biomaterials
Foresight survey		for limbs.			rehab	
Japan 1997	5 !!		20			
Science &	Policy	Practical use of a	20	Treatment and	IX -	Regenerative
Technology	planning	technique to		management of	circulation	medicine
Foresight survey		induce the		symptoms and		
Japan 1997		differentiation of		disease		
		fibroblasts into				
		cardiac muscle				
		and its application				
		to the treatment				
		of myocardial				
Colones 0	Dolier	infarction.	11	Trootmontond	IV/	Dogonorotica
Science &	Policy	Development of	11	Treatment and	IV -	Regenerative
Technology	planning	hybrid-type		management of	endocrine	medicine
Foresight survey		artificial		symptoms and		
Japan 1997		endocrine organs		disease		
		in which living				

		cells and artificial				
		objects coexist.				
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of functional blood purifiers that selectively remove specified components from blood	19	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of artificial hemoglobin as a red blood cell substitute.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of fully implanted artificial heart	14	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial lungs.	29	Treatment and management of symptoms and disease	X - respiratory	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial kidneys	26	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial pancreas	12	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of prevention and treatment methods for tooth decay and periodontitis to ensure the retention of 20 or more teeth at 80 year of age	14	Health promotion and prevention of disease	XI - GI tract, dental health	Population programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to store, cultivate and transplant one's own tissues.	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of implanted bladder control devices	12	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials

Science &	Policy	Practical use of	19	Treatment and	Other -	Regenerative
Technology	planning	gene therapy for		management of	generic	medicine
Foresight survey		genetic disorders		symptoms and		
Japan 1997				disease		
Science &	Policy	Availability of	24	Treatment and	Other -	Regenerative
Technology	planning	genetherapy		management of	generic	medicine
Foresight survey		based on oral		symptoms and		
Japan 1997		delivery		disease		
Science &	Policy	Practical use of	21	Treatment and	Other -	Therapeutic
Technology	planning	heterogeneous		management of	generic	procedures
Foresight survey		organ		symptoms and		
Japan 1997		transplantation as		disease		
		means of				
		treatment.				
Science &	Policy	Widespread use	12	Supporting the	Other -	Organisational
Technology	planning	of a worldwide		provision of care	generic	programmes
Foresight survey		organ supply		and/or increasing		
Japan 1997		system		service efficiency		
Science &	Policy	Development of a	6	Treatment and	Other -	Non-surgical
Technology	planning	partial tissue		management of	generic	therapy
Foresight survey		destruction		symptoms and		
Japan 1997		method non-		disease		
		invasive to the				
		living body.				
Science &	Policy	Practical use of	14	Rehabilitation	VIII - ear	Devices and
Technology	planning	implanted				biomaterials
Foresight survey		artificial cochleas				
Japan 1997		effective for both				
		conductive				
		hearing loss and				
		perceptive				
		hearing loss.				
Science &	Policy	Development of a	21	Supporting	V - mental	Devices and
Technology	planning	device to sense		patients receiving	health	biomaterials
Foresight survey		the needs of		care (designed to		
Japan 1997		demented aged		be used by		
		people.		individuals)		
Science &	Policy	Development of	14	Rehabilitation	XXI -	Devices and
Technology	planning	controlling			screening,	biomaterials
Foresight survey		devices which			rehab	
Japan 1997		help the				
		cooperative				
		muscular actions				
		enabling object-				
		oriented				
6.1	D. II	movement.	11	D. L. Litter	V0/1	D. C.
Science &	Policy	Widespread use	11	Rehabilitation	XXI -	Devices and
Technology	planning	of artificial legs			screening,	biomaterials
Foresight survey		featuring a small			rehab	
Japan 1997		power source and				
		computer control.				

Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a blood cell production and supply technique based on industrial-scale cultivation.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of systems for monitoring health condition and providing information for an appropriate diagnosis at home in event of accident or diseases.	11	Supporting patients receiving care (designed to be used by individuals)	XIX - injury	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of portable conversational speech interpretation systems.	24	Unknown	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of robots that care for people with severe physical and mental disabilities.	12	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Advancements in patient and hospital information management, leading to a reduction in waiting time at Japanese hospitals to 15 minutes or less.	7	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use in Japan of an ID card system that thoroughly covers an individual's health conditions and medical data.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey	Policy planning	Elucidation of the biological clock, leading to drug	9	Supporting patients receiving care (designed to	Other - generic	Unknown

Japan 1997		administration that takes it into consideration		be used by individuals)		
Science & Technology Foresight survey Japan 1997	Policy planning	Practical application of the production of artificial cells with organ characteristics.	29	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of anti-AIDS therapy	12	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of anti-cancer agents which target the manifestation functions of cancer genes	10	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Utilization of information about the gene structure of each individual patient in diagnosis and treatment	16	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology to regenerate organs or individuals from separated animal cells	20	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of methods for directly determining DNA sequences by physical means such as X-rays.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Control of signal transduction in the carcinogenesis of cells, and widespread use of treatment	20	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

		methods for dysdifferentiating carcinogenic cells.				
Science & Technology Foresight survey Japan 1997	Policy planning	Complete understanding of the factors contributing to stem cell multiplication, and widespread use of the practice of multiplying stem cells, as necessary, in test tubes and using them for treatment purpose	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology capable of synthesizing living cells by using only artificially produced chemical compounds.	31	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of elementary particle beam technology in genetic engineering.	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of drugs capable of preventing the occurrence of certain types of cancer.	11	Health promotion and prevention of disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of effective means to prevent metastasis of cancer.	14	Treatment and management of symptoms and disease	II - cancers	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of technologies for long-term (semi-permanent) culturing and preservation of	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine

		organs.				
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of artificial organs (pancreases, kidneys, livers, etc.) incorporating human cells and tissues	14	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an entirely implantable artificial kidney.	18	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an artificial cornea, allowing the visually impaired to regain their sight.	25	Treatment and management of symptoms and disease	VII - eye	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of artificial muscle elements.	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of interface technology between neural information and artificial organism structures.	25	Treatment and management of symptoms and disease	VI - nervous	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Development of neural-computers with new logic structures modeled on brain functions.	24	Unknown	VI - nervous	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of interfaces enabling direct linkage between the computer and the brain.	21	Treatment and management of symptoms and disease	XXI - screening, rehab	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of electric circuits with similar self-organization and self-restoration functions as neural networks.	14	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials

Science & Technology Foresight survey Japan 1997 Science & Technology	Policy planning Policy planning	Development of diagnostic and medical treatment micromachines capable of traveling on their own inside organisms (body cavity organs). Widespread use of remote surgery	14	Diagnosis and monitoring of disease Supporting the provision of care	Other - generic Other - generic	Devices and biomaterials IT systems, eHealth and mHealth
Foresight survey Japan 1997		systems utilizing virtual reality technology.		and/or increasing service efficiency		
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of vicarious experience devices (using virtual reality technology) which allow bed-ridden patients to take vacations, etc.	9	Rehabilitation	XXI - screening, rehab	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of methods for controlling the immune system locally	14	Treatment and management of symptoms and disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective Therapeutic for amyotrophic lateral sclerosis	21	Treatment and management of symptoms and disease	VI - nervous	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of batteries of artificial organs implanted in the living body	17	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of artificial liver (external devices supporting liver functions) usable on a long-term, continuous basis	19	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of heterogeneous organ transplantation as means of Therapeutic	19	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures

Science &	Dolicu	Dovolonment of	24	Rehabilitation	\/II 01/0	Davisos and
	Policy	Development of	24	Renabilitation	VII - eye	Devices and
Technology	planning	artificial eyes				biomaterials
Foresight survey		featuring				
Japan 1997		electronic circuitry				
		that can be				
		connected to				
		nerve and brain				
		cells				
Science &	Policy	Development of	29	Rehabilitation	VI -	Therapeutic
Technology	planning	methods for			nervous	procedures
Foresight survey		recombining				
Japan 1997		disconnected				
		central nerves				
Loveridge et al	Policy	Practical use of	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	directly visualising		monitoring of	generic	and imaging
		molecular		disease		
		structure at an				
		atomic level (e.g.				
		ultramicroscopy)				
Loveridge et al	Policy	At least 3	21	Treatment and	Other -	Devices and
1998	planning	common diseases		management of	generic	biomaterials
		will be treated by		symptoms and		
		portable or		disease		
		implanted				
		systems that				
		combine				
		individually				
		tailored drug				
		delivery with				
		automatic				
		feedback control				
		from a devices				
		continuously				
		monitoring the				
		condition (e.g.				
		diabetes control)				
Loveridge et al	Policy	Over-the-counter	21	Supporting	Other -	IT systems, eHealth
1998	planning	nucleicacid-based		patients receiving	generic	and mHealth
		tests suitable for		care (designed to		
		self-		be used by		
		administration		individuals)		
		become available				
		for the first time				
Loveridge et al	Policy	Results of more	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	than 50% of all		monitoring of	generic	and imaging
		types of		disease		
		diagnostic tests				
		are available at				
		the point of need				
		within one hour				

Loveridge et al 1998	Policy planning	Widespread use of real time 3-D high resolutiom imaging of physiological and metabolic functions	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	First practical use of non-invasive spectroscopy for in situ chemical pathology	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	Practical use of biosensors in a wide range of medical manufacturing and environmental applications	21	Unknown	Other - generic	Devices and biomaterials
Loveridge et al 1998	Policy planning	All common single genes diseases can be treated successfully by gene theraby	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Practical use of gene therapy is extended to the treatment of 30% of major life threatening diseases	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Nucleic acid based diagnostic techniques account for 10% of all diagnostic e work load	21	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Loveridge et al 1998	Policy planning	First practical use of therapies based on purpose-designed non-peptide molecules which mimic the activity of peptides.	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of polypeptide drugs which are delivered orally and targeted to	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)

		specific tissues				
Loveridge et al 1998	Policy planning	Widespread use of cosmaceuticals with scientifically proven effectiveness to treat the sypmtoms of skin ageing (e.g. wrinkles)	21	Health promotion and prevention of disease	XII - skin	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of improved technologies for early diagnosis increases the 5-year survival rate of cancer patients by 50%	21	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	Practical use of drugs modulating cellular systems to treat cancer	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of nutritional supplements or special diets based on an understading of the role of nutrients such as anti-oxidants in cancer prevention	21	Health promotion and prevention of disease	II - cancers	Population programmes
Loveridge et al 1998	Policy planning	Practical use of substances that contain rather eleminate cancer (e.g. use agents that control metastasis)	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	New methods of treating arterial occlusion and myocardial infarction dramatically reduce morbidity from cardiovascular diseases in 40-50 age group	21	Treatment and management of symptoms and disease	IX - circulation	Unknown

Loveridge et al	Policy	50% of the UK	21	Health promotion	IX -	Population
Loveridge et al Loveridge et al	Policy planning Policy	50% of the UK population receive individual risk assessment for cardiovascular disease based on genetic screening and lifestyle measures Understanding	21	Health promotion and prevention of disease Treatment and	IX - circulation	Population programmes Therapeutic
1998	planning	the immune system is sufficietly developed to allow routine transplantation without the use of immuno- suupression		management of symptoms and disease		procedures
Loveridge et al 1998	Policy planning	Practical use of xenotransplantati on of organs from animals to human	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Loveridge et al 1998	Policy planning	Incidence of each of the 3 major viral diseases is reduced by 90% by new vaccines or drug development	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Practical use of technologies for oral administration of multi-valent vaccines for the most important childhood illnesses	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Widespread introduction of malaria vaccine reduces the worldwide incidence of the diseases by 50%	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	First effective vaccine of HIV becomes available	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Development of drugs with proven	21	Treatment and management of	V - mental health	Drugs (not prophylactic

		efficacy for		symptoms and		vaccines)
		enhancing		disease		vaccines,
		cognitive				
		performance				
Loveridge et al	Policy	50% of patients	21	Diagnosis and	V - mental	Diagnostic tests
1998	planning	presenting with		monitoring of	health	and imaging
		mental illness		disease		
		such as				
		schizphrenia and				
		depression are				
		diagnosed using				
		objective genetic,				
		biochemical or				
		biophysical tests				
Loveridge et al	Policy	50% of surgical	21	Treatment and	Other -	Therapeutic
1998	planning	interventions		management of	generic	procedures
1330	Pidiming	carried out by		symptoms and	Benefic	procedures
		minimum-access		disease		
		technique		discuse		
Loveridge et al	Policy	10% of surgical	21	Treatment and	Other -	Therapeutic
1998	planning	interventions are		management of	generic	procedures
1550	Pidiming	carried out by		symptoms and	Benefic	procedures
		robotic		disease		
		techniques		discuse		
Loveridge et al	Policy	Development of	21	Treatment and	Other -	Devices and
1998	planning	biocompatible		management of	generic	biomaterials
	P.G	materials for		symptoms and	80	
		implants which		disease		
		elicit the required		u.ocacc		
		host response				
		(e.g. non-				
		thrombogenic or				
		stimulation of				
		host repair				
		mechanisms).				
Loveridge et al	Policy	Widespread use	21	Treatment and	XII - skin	Regenerative
1998	planning	for skin replacemt		management of	2	medicine
	p.ag	and/or repair of		symptoms and		
		reliable products		disease		
		based on tissue		and and		
		engineering				
Loveridge et al	Policy	Practical	21	Treatment and	Other -	Regenerative
1998	planning	availability for		management of	generic	medicine
	P. 2	regular clinical use		symptoms and	00	
		of functional		disease		
		human organ				
		tissue for kidney,				
		liver or pancreas				
Loveridge et al	Policy	Widespread use	21	Health promotion	XXI -	Drugs (not
1998	planning	of non-surgical		and prevention of	screening,	prophylactic
1330	Pidilililig	(eg. by		disease	rehab	vaccines)
		(CB. D)		discuse	TCHAD	vaccines)

	1		1	I	1	1
		vaccination) single application				
		contraception offering lifetime				
		control				
Loveridge et al	Policy	50% of	21	Health promotion	XXI -	Drugs (not
1998	planning	contraception		and prevention of	screening,	prophylactic
		involving		disease	rehab	vaccines)
		pharmacological				
		or vaccine				
		methods resides				
		with men				
Loveridge et al	Policy	50% of diagnostic	21	Supporting	Other -	IT systems, eHealth
1998	planning	and treatment		patients receiving	generic	and mHealth
		decisions involve		care (designed to		
		use of expert		be used by		
		systems		individuals)		
Loveridge et al	Policy	20% of time spent	21	Supporting	Other -	IT systems, eHealth
1998	planning	by doctors in		patients receiving	generic	and mHealth
		primary care		care (designed to		
		screeing is		be used by		
		replaced by		individuals)		
		patient				
		interaction with	6			
	D 1:	experts systems	24		0.1	
Loveridge et al	Policy	Practical use of	21	Supporting	Other -	IT systems, eHealth
1998	planning	remote electronic		patients receiving	generic	and mHealth
		systems which substitute human		care (designed to be used by		
		labour in		individuals)		
		montoring the		marviadais)		
		physical				
		parameter of				
		elderly and people				
		with disability in				
		the community				
Loveridge et al	Policy	Widespread use	21	Supporting the	Other -	IT systems, eHealth
1998	planning	of unified and		provision of care	generic	and mHealth
		standardised		and/or increasing		
		electronic data		service efficiency		
		collection systems				
		and data				
		informats for				
1	D. II	medical records	24	6	Out	IT and a second
Loveridge et al	Policy	At least 50% of	21	Supporting the	Other -	IT systems, eHealth
1998	planning	health care		provision of care	generic	and mHealth
		centres (hospitals,		and/or increasing		
		clinic,etc) are connected to		service efficiency		
		national				
		information				
	1	Innormation		<u> </u>		

		1	ī		T	1
		electronic				
		networks for				
		patient records				
		and information				
		on diagnosis,				
		treatment and				
		outcome				
Loveridge et al	Policy	Widespread use in	21	Supporting the	Other -	IT systems, eHealth
1998	planning	health care of		provision of care	generic	and mHealth
		electronic		and/or increasing		
		information		service efficiency		
		systems which		,		
		span existing				
		professional and				
		organisational				
		boundries (health,				
		social service,				
Lavaridae et al	Delieu	housing etc)	21	Haalth muanaatian	VVI	Donulation
Loveridge et al	Policy	Improved	21	Health promotion	XXI -	Population
1998	planning	understanding of		and prevention of	screening,	programmes
		the role of gene-		disease	rehab	
		environment				
		interactions in				
		causing common				
		structural birth				
		birth defects (e.g.				
		cleft palate)				
		permits the				
		implementation of				
		primary				
		preventable				
		programmes				
Loveridge et al	Policy	Understanding	21	Health promotion	XXI -	Population
1998	planning	how		and prevention of	screening,	programmes
		environmental		disease	rehab	
		factors				
		encountered in				
		early life cause				
		adult disease				
		leads to national				
		standards for diet				
		and lifestyle in				
		pre-natal and				
		early life				
Loveridge et al	Policy	Widespread use	21	Health promotion	Other -	Organisational
1998	planning	of financial		and prevention of	generic	programmes
		inducements by		disease	J	F 20. 3
		national and				
		private health				
		insurers or similar				
		bodies to adopt				
		Dodles to adopt				

		healthier lifestyle or diets				
Loveridge et al 1998	Policy planning	The causes of the rising prevalence of asthma are elucidated and action based on this knowledge leads to a 50% reduction in the incidence of severe disease	21	Health promotion and prevention of disease	X - respiratory	Population programmes
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	X-ray replaced by Magnetic Resonance Imaging (MRI)	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	operating theatre of 2010 will be built with an ultra-open MRI system with parallel ultrasound facilities and complete optical capability	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Endoscopes will reduce in size as fibres, lenses and electronic sensors get smaller,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	ccd image sensors have the ability to see in both ultra-violet and near infrared.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	New magnetic sensing technologies will detect the configuration of the endoscope and accessory devices inside the patient.	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials

Operating theatre	Policy	Auto focus and	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	zoom optical	14	monitoring of	generic	and imaging
Department of	hiamini	systems will be		disease	genenc	and magnig
· ·		interfaced with 30		uisease		
Trade and						
Industry		to take the				
		endoscope				
		imaging				
		capability beyond				
		what is currently				
		possible with				
		human vision.				
Operating theatre	Policy	High resolution	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	ultrasound in		monitoring of	generic	and imaging
Department of		closer proximity		disease		
Trade and		to the tissue and				
Industry		structures to be				
		studied				
Operating theatre	Policy	Laser induced	14	Diagnosis and	II - cancers	Diagnostic tests
of the year 2010;	planning	fluorescence		monitoring of		and imaging
Department of		imaging systems		disease		
Trade and		for diagnosis of				
Industry		early malignant				
,		changes,				
		monitoring				
		and therapy will	6			
		become available.				
Operating theatre	Policy	Near infra-red	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	spectroscopy, for		monitoring of	generic	and imaging
Department of	'	looking at tissue		disease	3	
Trade and		oxygenation state				
Industry		70				
Operating theatre	Policy	Confocal, or other	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	optical, ultrasonic		monitoring of	generic	and imaging
Department of	, p.a	or magnetic		disease	80	
Trade and		resonance		disease		
Industry		microscopy, for				
industry		on-line histology				
		of bulk samples				
Operating theatre	Policy	Minimal Access	14	Treatment and	Other -	Therapeutic
of the year 2010;	planning	Surgery is likely to		management of	generic	procedures
Department of	Pidililig	account for as		symptoms and	generic	procedures
Trade and		much as 75% of		disease		
Industry		surgical		uiscase		
industry		_				
Operating theatre	Policy	procedures	1/	Troatment and	Other -	Modical aquiament
Operating theatre	Policy	Robotic camera	14	Treatment and		Medical equipment
of the year 2010;	planning	holders are likely		management of	generic	
Department of		to become routine		symptoms and		
Trade and		in laparoscopic		disease		
Industry		procedures.				

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table's control system and the robotics system could become integrated in the future operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Ability to ventilate all patients from neonates to adults	14	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Control handsets will incorporate dot matrix displays which will give the operator information about the condition of the table, position of the top and warnings about possible hazards	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table may have a built-in patient temperature regulation system.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Connection between the Operating Room and the Anaesthetic machine in the Control Room will be via the Anaesthetist in the Operating Room.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The Anaesthetic machine will incorporate both inhalation agent vaporisation and multi-drug infusion systems These devices will be electronically integrated into the monitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

	T	Γ				,
		and information				
		management and				
		anaesthetic				
		record keeping				
		system so that				
		vaporiser				
		concentration				
		settings and				
		infusion rates will				
		be continuously				
		recorded				
Operating theatre	Policy	Mechanical flow-	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	meters will be	- '	provision of care	generic	medical equipment
Department of	piarining	replaced by		and/or increasing	Beriefie	
Trade and		electronic gas		service efficiency		
				Service efficiency		
Industry Operating theatre	Policy	mixing systems Patient	14	Cupporting	Other -	IT systems allealth
Operating theatre	Policy		14	Supporting		IT systems, eHealth
of the year 2010;	planning	monitoring will be		patients receiving	generic	and mHealth
Department of		very simple and		care (designed to		
Trade and		intuitive probably		be used by		
Industry		touch screen and		individuals)		
		quite possibly				
		voice activation.				
Operating theatre	Policy	Monitors will also	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	network into		patients receiving	generic	and mHealth
Department of		central areas		care (designed to		
Trade and		outside the		be used by		
Industry		operating theatre		individuals)		
		so that, for				
		example,				
		anaesthetics being				
		delivered by less				
		experienced staff				
		can be monitored				
		remotely.				
Operating theatre	Policy	The operation	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	room will capture		patients receiving	generic	and mHealth
Department of		the data from one		care (designed to		
Trade and		or perhaps two		be used by		
Industry		small 'wireless'		individuals)		
		sensors placed on				
		the body that will				
		provide pulse				
		oxyimetry C02,				
		ECG and other key				
		parameter data				
		and then transmit				
		them to the				
		monitor via radio				
		or IR technology.				

Operating theatre	Policy	Patient will be	14	Supporting	Other -	Devices and
of the year 2010;	planning	equipped with a		patients receiving	generic	biomaterials
Department of		belt (or other		care (designed to		
Trade and		suitable garment)		be used by		
Industry		into which all		individuals)		
		monitoring and				
		feed lines will be				
		terminated, and				
		which will include				
		significant active				
		capability. Drip				
		and other lines				
		will also be				
		terminated in the				
		belt				
Operating theatre	Policy	Patient can be	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	"plugged" into		patients receiving	generic	and mHealth
Department of		electrical support,		care (designed to		
Trade and		monitoring and		be used by		
Industry		stimulation as		individuals)		
		well as fluid and				
		chemical agents				
		using a single				
		connector to				
		facilitate transfer				
		of patient from one ward to				
		another or from				
		the operation				
		theatre				
Operating theatre	Policy	Operation lamp	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	will be replaced		provision of care	generic	
Department of		by a better light		and/or increasing	0	
Trade and		source		service efficiency		
Industry						
Operating theatre	Policy	Automatic control	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	of light pattern in		provision of care	generic	' '
Department of		the operation		and/or increasing		
Trade and		theatre		service efficiency		
Industry				4		
Operating theatre	Policy	The operating	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	lamp of the future		provision of care	generic	
Department of		is likely to use		and/or increasing		
Trade and		much more		service efficiency		
Industry		electronics to				
		accurately control				
		the voltage,				
		dimming, focus,				
		tracking and to				
		limit maximum				
		light intensity to				

		safe levels.				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating lamps of the future will be sealed for easy disinfection	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemedicine	14	Unknown	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemonitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Teleconsultation	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telesurgery for demonstartion or teaching	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Minimal access surgery (MAS)	14	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Systems in which as much of the patient's own blood is recovered and recycled as possible.	14	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Use of flexible endoscope technology to allow surgeons to see around and behind structures, giving the surgeon greater access and the patient a greater degree of safety.	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials

Operating theatre	Policy	A move away	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	from the use of X-	14	monitoring of		and imaging
Department of	hiaiiiiiig	rays and image		disease	generic	anu magmg
Trade and		intensification		uisease		
		towards more				
Industry						
		mobile methods				
Ou a national threatme	Delie	of MRI scanning.	1.4	Tuestas ant and	Other	Thereses
Operating theatre	Policy	Developments in	14	Treatment and	Other -	Therapeutic
of the year 2010;	planning	the use of laser		management of	generic	procedures
Department of		and particularly		symptoms and		
Trade and		electrosurgery		disease		
Industry	D. U.	The Colors	4.4	C	Other	NA - I' - I I' I
Operating theatre	Policy	Use of robotics	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	and head up		provision of care	generic	
Department of		display allowing		and/or increasing		
Trade and		surgeon sitting in		service efficiency		
Industry		a control room				
		rather than being				
		in the theatre				
		with the patient				
Operating theatre	Policy	Coding will be	14	Supporting the	Other -	IT systems, eHealth
of the year 2010;	planning	used to associate		provision of care	generic	and mHealth
Department of		patient, operating		and/or increasing		
Trade and		procedure (and so		service efficiency		
Industry		appropriate tools				
		and drugs),				
		support facilities				
		and to generate				
		automatic records				
		of usage.				
Operating theatre	Policy	Tools and devices	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	for a procedure		provision of care	generic	
Department of		will be located in a		and/or increasing		
Trade and		carousel		service efficiency		
Industry		analogous to that				
		for a computer				
		numerically				
		controlled				
		machine tool. This				
		will allow the				
		surgeon to				
		present his tool				
		holder to it, have				
		the old tool				
		extracted and a				
		new one inserted.				
Operating theatre	Policy	Robots will be	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	used as transport		provision of care	generic	
Department of		vehicles both		and/or increasing		
Trade and		within the		service efficiency		
Industry		operating room				

		and for the surrounding support areas				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will carry out very precise procedures controlled by the surgeon from a distance,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Joint replacement be performed robotically	14	Treatment and management of symptoms and disease	XIII - musculoske letal	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operation theatre may be controlled by a robot "software" box th at will respond to voice recognition of the surgeon and change factors such as the heating of the theatre, the lighting and position of the table	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A robot would be able to transfer sterile instrument trays from a central sterile store to the surgeon at the operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Transport Robots could be used in the supply and disposal functions outside the operating room within the operating suite	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will be used in moving patients from ward to theatre areas (to replace the use of porters)	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Using dedicated robot trucks similar to the supply trucks, waste could be collected on a regular basis from each theatre and taken to an automatic local waste reduction/disposal facility adjacent to the theatre suite.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Disposal of hospital material could be performed on site with the use of machines such as "needle eaters"	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Bulky X-Ray machines will probably be a thing of the past and replaced by computerised radiology	14	Diagnosis and monitoring of disease	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A central control room, with visual links to each theatre served, could house all of the equipment.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	All theatres could be designed with ultra-clean ventilation systems or an adapted containment system to reduce the risk of the spread of infection	14	Health promotion and prevention of disease	I - infections	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Patients identification bracelets could be coded and bar checked as they moved through	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment

Operating theatre	Policy	the system so that their progress could be monitored at all times Automated	14	Supporting the	Other -	Medical equipment
of the year 2010; Department of Trade and Industry	planning	trolleys and doors that can be electronically controlled by robots	11	provision of care and/or increasing service efficiency	generic	Wedieur equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Further development of 3D imaging techniques.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Fluorescenceassist ed Resection and Exploration (FLARE) technologies, which combine both visible light imaging with near-infra red imaging of fluorescent biomarkers, can detect particular pathologies associated with tumours without the need for biopsy	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Colour X-ray or TEDDI imaging can be used to biopsy tissues by utilising scattered X-rays to build a spatially-resolved picture that can distinguish between different materials.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	In vivo neuroimaging, both at the tissue and cellular level	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the	Policy planning	Brain imaging techniques such as functional	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

2020s, 2010		magnetic resonance				
		imaging (fMRI)				
UK technology	Policy	Lab-on-a-Chip	10	Diagnosis and	Other -	Diagnostic tests
and innovation futures for the 2020s, 2010	planning	(LOC) devices integrate and scale-down biomedical and		monitoring of disease	generic	and imaging
		other analytical laboratory functions and processes to a				
		miniaturised chip format.				
UK technology	Policy	Nucleic acid	10	Diagnosis and	Other -	Diagnostic tests
and innovation	planning	probes and		monitoring of	generic	and imaging
futures for the		diagnostic		disease		
2020s, 2010		microarray				
		systems can detect the nucleic				
		acid sequence or				
		sequences that				
		identify a specific				
		infectious disease				
		agent, human				
		genetic disease or individual (DNA profiling).				
UK technology	Policy	A new focus on	10	Treatment and	Other -	Regenerative
and innovation	planning	single-stranded		management of	generic	medicine
futures for the		DNA, micro RNA		symptoms and		
2020s, 2010		(miRNA) and		disease		
		double-stranded				
		RNA (dsRNA) technologies as				
		therapeutics may				
		lead to clinically-				
		approved				
		interventions for				
		gene therapy and				
		treatment of medical disease.				
UK technology	Policy	RNA interference	10	Treatment and	Other -	Regenerative
and innovation	planning	(RNAi) may lead		management of	generic	medicine
futures for the		to new		symptoms and		
2020s, 2010		treatments.		disease		
UK technology	Policy	Viruses, bacteria	10	Treatment and	Other -	Regenerative
and innovation	planning	or yeasts may be		management of	generic	medicine
futures for the 2020s, 2010		able to act as carriers for new		symptoms and disease		
20203, 2010		sequences of DNA		uisease		

LIV tachnalagu	Dollar	Increased	10	Diagnosis and	III - blood	Drugs In at
UK technology	Policy	Increased	10	Diagnosis and	III - blood	Drugs (not
and innovation	planning	understanding of		monitoring of		prophylactic
futures for the		individual		disease		vaccines)
2020s, 2010		sensitivities to				
		drugs				
UK technology	Policy	DNA vaccines for	10	Health promotion	Other -	Prophylactic
and innovation	planning	AIDS, malaria,		and prevention of	generic	vaccines
futures for the		hepatitis B and		disease		
2020s, 2010		certain cancers				
		may be available				
		within 10 years				
UK technology	Policy	New treatments	10	Treatment and	VI -	Unknown
and innovation	planning	for for		management of	nervous	
futures for the		neurodegenerativ		symptoms and		
2020s, 2010		e conditions such		disease		
,		as dementia.				
UK technology	Policy	'Cognition	10	Treatment and	VI -	Drugs (not
and innovation	planning	enhancers';		management of	nervous	prophylactic
futures for the	,	substances that		symptoms and		vaccines)
2020s, 2010		enhance the		disease		14460111657
20203, 2010		performance of		discuse		
		our brain in				
		specific ways,				
		such as improving				
		short-term				
		memory and				
		increasing our				
		speed of thought				
		enhancement				
		through lifestyle				
		drugs may will				
	D 1:	become the norm.	40			5 / .
UK technology	Policy	'Emoticeuticals',	10	Treatment and	V - mental	Drugs (not
and innovation	planning	drugs that act by		management of	health	prophylactic
futures for the		changing		symptoms and		vaccines)
2020s, 2010		hormone levels in		disease		
		the body, may				
		mediate our				
		responses in our				
		private lives and				
		work.				
UK technology	Policy	Sensoceuticals'	10	Treatment and	Other -	Drugs (not
and innovation	planning	might enhance		management of	generic	prophylactic
futures for the		pleasure by		symptoms and		vaccines)
2020s, 2010		restoring or		disease		
		accentuating the				
		senses.				
UK technology	Policy	The advent of a	10	Health promotion	V - mental	Drugs (not
and innovation	planning	drug that mimics		and prevention of	health	prophylactic
futures for the		the positive		disease		vaccines)
2020s, 2010		effects of alcohol				

		with none of its drawbacks.				
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells replacing malfunctioning liver cells or even growing entire livers to replace diseased ones	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new neurons to those with brain damage	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new heart cells to those with heart disease	10	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for Parkinson's and Alzheimer's diseases	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for spinal cord injury, stroke, cancer, burns, cardiovascular disease, diabetes, osteoarthritis and rheumatoid arthritis; as well as furnishing an endless supply of red blood cells for transfusions.	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Development of a cheap anti-malarial drug.	10	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	Programming a bacterium or virus that can identify malignant cells and can deliver a therapeutic agent could have major benefits for treating cancer and similar illnesses	10	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

UK technology	Policy	Stratified	10	Diagnosis and	Other -	Diagnostic tests
and innovation	planning	medicine: it will	10	monitoring of	generic	and imaging
futures for the		become		disease		
2020s, 2010		increasingly				
·		possible to				
		analyse an				
		individual for				
		certain				
		biomarkers to				
		determine the				
		best course of				
		treatment				
UK technology	Policy	Personalised	10	Treatment and	Other -	Drugs (not
and innovation	planning	medicine		management of	generic	prophylactic
futures for the				symptoms and		vaccines)
2020s, 2010				disease		
UK technology	Policy	In-situ tissue	10	Treatment and	Other -	Regenerative
and innovation	planning	regeneration:		management of	generic	medicine
futures for the		Material is		symptoms and		
2020s, 2010		implanted directly		disease		
		in the body and				
		regenerates the				
		tissue over time				
		as the material				
	ļ	degrades.				
UK technology	Policy	Tissue	10	Treatment and	Other -	Regenerative
and innovation	planning	engineering:		management of	generic	medicine
futures for the		Material can act		symptoms and		
2020s, 2010		as temporary		disease		
		scaffold for cell culture and tissue				
		growth in vitro				
LIV tachnalagy	Policy		10	Treatment and	Other -	Dogonorativo
UK technology and innovation	planning	Micro-masonry and 3D organ	10		generic	Regenerative medicine
futures for the	piaiiiiig	printing		management of symptoms and	generic	medicine
2020s, 2010		techniques		disease		
UK technology	Policy	Brain Computer	10	Rehabilitation	Other -	Devices and
and innovation	planning	Interface	10	c.iasiiitatioii	generic	biomaterials
futures for the	pianing	meriaec			generic	Diomatemais
2020s, 2010						
UK technology	Policy	Neuroprosthetics:	10	Rehabilitation	VI -	Devices and
and innovation	planning	the connection			nervous	biomaterials
futures for the		can occur				
2020s, 2010		between any part				
		of the nervous				
		system (such as				
		peripheral nerves)				
		and a device.				

UK technology and innovation futures for the 2020s, 2010	Policy planning	Magnetoencephal ography (MEG): maps brain activity by recording the magnetic fields produced by electrical currents occurring in the brain	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional magnetic imaging (fMRI) – involves measuring changes in blood flow related to neural activity in the brain.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional Near- Infrared Spectroscopy (fNIRS) for optical topography	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Electrocorticograp hy (EoCG), measure the electrical activity of the brain using electrodes which are implanted inside the skull, but outside the brain tissue.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Implanted brain chips for controlling computers	10	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Neural prosthetics replace lost limbs	5	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled robots for personal healthcare	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled wheelchairs	10	Rehabilitation	XXI - screening, rehab	Medical equipment

III/ to obre all a su	Doliny	ob colthy Tyramanlas	10	Cupporting the	Othor	IT systems all salti-
UK technology and innovation futures for the 2020s, 2010	Policy planning	ehealth: Examples include health information networks, electronic health records, telemedicine services, personal wearable and portable mobile devices, health portals and other tools that assist in health monitoring, diagnosis and treatment.	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Lab-on-a-chip technologies could also bring diagnostics down to a personal scale, where patients can test themselves and transmit data electronically for analysis and treatment.	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Tailored Medicine	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	The anti-viral medicine with highly efficiency applies to clinical medicine widely	17	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	standardized safe evaluation system which include the technology for monitoring and examination of trans-gene biology will be established;	17	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes

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Past speculations of future health technologies: a description of technologies predicted in 15 forecasting studies 1986-2010

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ABSTRACT

Objective: To describe and classify health technologies predicted in forecasting studies.

Design and methods: Description of health technologies predicted in 15 forecasting studies published between 1986 and 2010 that were identified in a previous systematic review. Health technologies are classified according to their type, purpose and clinical use; relating these to the original purpose and timing of the forecasting studies.

Data sources: All health-related technologies predicted in 15 forecasting studies identified in a previously published systematic review.

Main outcome measure: Outcomes related to i) each forecasting study including country, year, intention and forecasting methods used and ii) the predicted technologies including technology type, purpose, targeted clinical area and forecast timeframe.

Results: Of the 896 identified health-related technologies, 685 (76.5%) were health technologies with an explicit or implied health application and included in our study. Of these, 19.1% were diagnostic or imaging tests, 14.3% devices or biomaterials, 12.6% information technology systems, eHealth or mHealth, and 12% drugs. The majority of the technologies were intended to treat or manage disease (38.1%) or diagnose or monitor disease (26.1%). The most frequent targeted clinical areas were infectious diseases followed by cancer, circulatory and nervous system disorders. The most frequent technology types were for: infectious diseases - prophylactic vaccines (45.8%); cancer - drugs (40%); circulatory disease - devices and biomaterials (26.3%), and diseases of the nervous system - equally devices and biomaterials (25%) and regenerative medicine (25%). The mean timeframe for forecasting was 11.6 years (range 0-33 years, median=10, SD= 6.6). The forecasting timeframe significantly differed by technology type (p=0.002), the intent of the forecasting group (p<0.001), and the methods used (p<001).

Conclusion: Description and classification of predicted health-related technologies is crucial in preparing healthcare systems for adopting new innovations. Further work is needed to test the accuracy of predictions made.

Strengths and limitations of the study

- The study is a comprehensive description and classification of health-related technologies predicted in 15 forecasting studies identified in a previously published systematic review.
- The study summarises the forecast technologies by type e.g. medical devices, diagnostic tests or drugs; by clinical purpose e.g. prevention, diagnosis or treatment and by targeted clinical area by ICD10 chapter; and relates this to the forecasting purpose and timeframe.
- The analysis and the health-related technologies identified are constrained by the methods used in the forecasting studies for example by the areas of interest of the experts involved.
- Although the study highlights the identified technologies, the retrospective accuracy of the studies remains to be researched.

INTRODUCTION

People are in general living longer and surviving previously life threatening illnesses. A proportion of this effect is attributed to the use of novel health interventions and technologies, such as new vaccines to prevent disease; new diagnostic tests to diagnose diseases earlier and with improved accuracy; and new drugs, devices and surgical procedures to treat diseases more effectively. In addition, new health technologies may also be used to enhance function and improve quality of life, such as prostheses, sensory aids and cosmetic enhancements. Technological advances and innovation are leading to new health interventions becoming available to healthcare markets at an increasing speed; these often cost more than current alternatives and significantly affect the cost of healthcare services and delivery. To ensure that patients can access the most effective and cost effective interventions, and because many health systems work within constrained budgets, healthcare systems need to be prepared to respond to new developments. A crucial step in such preparation is the accurate identification and forecasting of likely significant technological healthcare developments.

Forecasting is widely used for planning and strategic decision making around industrial and economic development at organisational, regional and national levels.⁵ Within healthcare, forecasting can be used to build strategies for supporting innovators and companies to develop new interventions; to plan future research programmes and delivery of healthcare; and to prepare health services and personnel to respond to technological developments of benefit to patients and service provision. Health technology forecasting uses various methods such as Delphi surveys and reviews of the literature^{6,7,8} to identify emerging health technologies that are intended to address important unmet healthcare needs or that need additional evaluation, and to analyse their potential impact on patients and health systems.⁴

To get the maximum benefit from forecasting, it is important that the methods used to identify emerging interventions and technologies are appropriate for the aims and timeframe of the forecasting exercise and also as accurate as possible.

In a recent systematic review⁹ we found 15 forecasting studies with 3 to 20 year timeframes that identified emerging health-related topics and technologies predicted between 1986 and 2010 from 12 high income countries, including six from the United Kingdom (UK). Identifying and classifying the predicted new technologies into meaningful groupings is important for healthcare system preparedness, allowing planned assessment and adoption as appropriate. Here we describe and classify the health technologies predicted in the forecasting studies according to their type, purpose and clinical use. We relate these to the forecast time period and develop an overview of the technological and clinical frontiers of innovation in health and healthcare provision.

METHODS

See table 1 for a full list of the 15 studies identified in our prior systematic review. We extracted all forecast topics from the 15 forecasting studies using a standardised set of data for each of these predicted topics and on the source study. Data related to the forecast topics included the name of the topic as written in the forecasting reports and papers, and the predicted forecast timeframe. Data related to the study included the country or region of the forecast, year the study was undertaken, its intention and remit, the study forecasting timeframe, and the number and type of forecasting methods used.

Identification and inclusion of health technologies

For final inclusion and analysis, topics had to be health technologies as defined by the National Institute of Health Research (NIHR) Health Technology Assessment (HTA) programme¹⁰: "any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease". We also included topics that related to the recognition of, or change in, health states or emotions, or health-related behaviours. All topics needed to have an explicit or implied health-related application or identified patient group for final inclusion. Topics were excluded if they related exclusively to foods, plants, animals, insects, new sources of fuel or energy, environmental contamination, legislation or health insurance.

LD read all the included studies and manually extracted all technologies mentioned in the forecast from the published text and related tables. Two authors (CP and LD) independently scrutinised each identified topic and applied the inclusion and exclusion criteria. Where there was insufficient information on a topic to make the inclusion/exclusion decision, we undertook brief and very limited searches on the Internet to find additional information.

All topics classed as a health technology with an explicit or implied health-related application, were subsequently coded based on their technology type, intended purpose, and targeted clinical use:

Technology type: we used broad categories: assistive devices and rehabilitation aids; devices and biomaterials; diagnostic tests and imaging; drugs; information technology (IT) systems, electronic health systems (eHealth) and mobile health (mHealth); medical equipment; non-surgical therapy; organisational programmes; prophylactic vaccines; population programmes; regenerative medicine approaches; and therapeutic procedures.

Technology purpose: we used categories that relate to the intended point on the patient pathway: health promotion and the prevention of disease; diagnosis and monitoring of disease; treatment and management of symptoms and disease; and rehabilitation. We supplemented these with two groupings that categorised technologies that support the provision of care i) supporting patients receiving care and designed to be used by individuals (patients, caregivers or healthcare professionals) and ii) supporting the provision of care and/or increasing service efficiency.

Targeted clinical area (specialty): we used the international statistical classification of diseases and related health problems 10th revision (ICD10)¹¹ chapter headings relating to diseases and other morbid conditions (chapters I-XVII); symptoms, signs and abnormal findings (chapter XVIII); injuries, poisoning and other consequences of external causes (chapter XIX); external causes of diseases and morbid conditions chapter XX); and factors influencing health status and contact with health services for people not currently sick (chapter XXI). Chapter XXI includes contraception,

technologies used in population screening, health promotion and disease prevention, and general rehabilitation.

All topics with disputed inclusion, exclusion or categorisation were initially discussed between two authors (LD and CP) and disagreements resolved where possible. Where disagreements remained, topics were discussed with the other authors as a group and the final categorisation agreed through consensus.

Technology forecast timeframe: for each health-related technology forecast we calculated the difference in years between each technology's predicted year of impact as identified in the original study, and the year when the prediction was made, i.e. the year of the original study. Technology forecasts were classified as short term if their forecasting timeframe was less than 3 years, short to medium term if it was 3-10 years, medium to long term if it was 11-20 years and long term for those with timeframes of more than 20 years. Although the original systematic review excluded forecasting studies which exclusively adopted a short time frame of less than 3 years, some studies with longer time frames also provided predictions with shorter time frames, and these were included in the analysis.

Data analysis

We analysed the data using IBM SPSS statistics (version 22) for Windows. We present descriptive analyses as means and standard deviations (SD) for normally distributed continuous variables. Statistically significant differences were determined using ANOVA for continuous normally distributed data and X² for dichotomous variables.

RESULTS

We identified 896 predicted topics from the 15 forecasting studies. Of these, we judged that 685 (76.5%) were health-related technologies with an explicit or implied health-related application. The most frequently excluded topics were those that described advances in the underpinning scientific knowledge (8.7%), such as determination of whole human DNA base sequence and identifying genetic links to

diseases. A full list of the included health-related technologies is attached as an online appendix.

Of the 685 health-related technologies, 52.3% were forecast from 6 studies by governmental organisations (such as the UK Department of Trade and Industry¹²), 21.9% by commercial/consultancy organisations (such as British Telecommunications plc¹³), 14.5% by policy planning groups (such as Loveridge et al 1995⁶), 8.9% by research groups (such as those by Stevens et al 1997⁷), and 2.5% by non-profit organisations (such as Institute of the Future¹⁴). Looking at the purpose of forecasting, our data showed that two thirds (68%) of the health technologies were forecast for policy planning purposes, 18.1% for research purposes and 13.9% for commercial purposes.

Nearly half (48.9%) of the identified technologies were from 6 UK-based studies and reports, 15.0% were from Japan, 11.7% from the Netherlands, 11.4% from the United States of America (USA) and 8.0% from Canada. The remainder were from a homogenous group of developing countries and South Africa (3.8%), other European countries (0.9%) and China (0.3%).

Technology type

Of the 685 health technologies forecast, 19.1% were diagnostic tests and imaging technologies, such as advanced ultrasound imaging systems and molecular diagnosis; 14.3% were devices and biomaterials, such as tissue engineered devices and drug impregnated devices; 12.6% were IT systems, eHealth and mHealth, such as electronic prescriptions and telemedicine; 12.0% were drugs, such as new anaesthetic vapours and electronically activated drugs; and 11.7% were regenerative medicine approaches, such as gene therapy for diabetes and widespread use of gene therapy for familial hypercholesterolemia (Table 2 and online appendix). Drug technologies were more commonly forecast in studies carried out by researchers (36.1%) than other groups, while technologies for diagnostic tests and imaging were more commonly forecast in studies by governmental agencies than other groups (Table 3). Regenerative medicine approaches were the most commonly forecast technologies (23.2%) by studies with a commercial intent while diagnostic tests and imaging were the most commonly forecast technologies by

studies with policy planning and research intentions (20.6% and 23.4% respectively) (p<0.001).

Technology purpose

Of the 685 health technologies included in the forecasting reports, 38.1% were for the treatment and management of symptoms and disease, such as development of effective treatment for amyotrophic lateral sclerosis and the practical use of gene therapy for genetic disorders; 21.6% for the diagnosis and monitoring of disease, for example a diagnostic bio-chip for cancer and the further development of 3D imaging techniques; 13% for health promotion and the prevention of disease, such as the first effective vaccine of HIV and DNA vaccines for AIDS, malaria, hepatitis B and certain cancers; 10.2% for supporting the provision of care, for example tele-monitoring and teleconsultation; 8.0% for supporting patients receiving care, such as smart pill bottles to remotely monitor medication use and thought-controlled robots for personal healthcare; and 4.7% for rehabilitation, for example artificial legs and robotic prosthetics.

Technologies for treatment and disease management were the most common regardless of the intention of the study: 35.8% among studies with a commercial intent, 35.8% for policy planning and 48.4% for research. Technologies for treatment and disease management were also the most common technologies forecast by all the various groups (60.7% among researchers, 39.9% among governmental organisations and 35.8% among commercial organisations).

Targeted clinical area

Using the ICD10 codes to define the targeted clinical area, just over half of the health technologies (50.4%) were for diseases and conditions that were not specified or that could not be coded or that crossed multiple specialities. Of the 340 health technologies that could be coded to a specific ICD10 chapter, the top five targeted clinical areas were: 1) infectious and parasitic diseases ICD-I (14.1%), such as development of vaccines for AIDS and vaccines for malaria, 2) neoplasms ICD-II (11.8%), such as expanding metal stents for oesophageal cancer and diagnostic biochip for cancer, 3) diseases of the circulatory system ICD-IX (11.2%), such as artificial muscles in replace of heart transplants and implantable vascular stents, 4)

diseases of the nervous system ICD-VI (10.6%), such as artificial brain cells and artificial peripheral nerves and 5) factors influencing health status and contact with health services ICD-XXI (10.3%), such as a personal wearable health monitor and extension of average lifespan to over 100.

Congenital malformations, deformations and chromosomal abnormalities ICD-XVII and symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified ICD- XVIII had the fewest forecast technologies (0.3% each).

Table 4 shows the technology types and purposes for the forecast technologies within the five most frequent targeted clinical areas. The most frequent technology type forecast for infectious and parasitic diseases were prophylactic vaccines (45.8%); for cancer were drugs (40%); for diseases of the circulatory system were devices and biomaterials (26.3%); for diseases of the nervous system were devices and biomaterials (25%) and regenerative medicine (25%); and for factors influencing health status and contact with health services including screening and rehabilitation, devices and biomaterials (31.4%). The most frequent technology purpose was health promotion and disease prevention for both infectious and parasitic diseases (ICD-I) (60.4%) and factors influencing health status and contact with health services including screening and rehabilitation (ICD-XXI) (51.4%). Technologies for treatment and disease management were most common for cancer (55.0%), diseases of the circulatory system (65.8%) and nervous system disorders (61.1%).

Technology forecast timeframe

Data was available to calculate the prediction timeframe for 607 of the identified health technologies. The mean timeframe for forecasting predictions was 11.6 years (range 0-33 years, median=10, SD=6.6). There was a significant difference in the mean prediction timeframe by technology type (p=0.002), with non-surgical therapies having the shortest mean forecast timeframe (9.07 years) and population health programmes having the longest mean forecast (14.53 years) (Table 5). There were no statistically significant differences in the mean duration of the technology prediction timeframe by the technology purpose and we were not able to detect any particular trend in the technology types or purposes of forecast over time.

There was a statistically significant difference in the forecast timeframe by the type of group undertaking the forecasting (p<0.001): 58% of the long-term forecasts (>20 years) were made by policy planning groups and 51% of short-term forecasts (<3 years) were by research groups.

Technologies forecast by studies with research intentions had the shortest mean forecast timeframe (4.49 years) while those for policy making had the longest timeframe (14.16 years) (p<0.001). Similarly, technologies forecast by researchers had significantly shorter mean timeframes (3.56 years) compared to those made by governmental agencies which had the longest mean forecast timeframes (13.42 years) (P<0.001).

There was a statistically significant difference in the mean forecast timeframe when considering the forecasting method (p<0.001) (Figure 1). Technologies forecast using methods that included creativity-based methods which require brainstorming, such as scenario building, had a significantly longer forecasting timeframe (13.5 years) compared to those did not include creativity-based methods such as literature reviews (9.7 years) (p<0.001). On the other hand technologies forecast using methods that included evidence-based methods such as literature reviews and evidence from health technology assessment (HTA) organisations, had significantly shorter forecasting timeframes (8.2 years) than those that did not include evidence-based methods (10.8 years) (p<0.001).

DISCUSSION

Being aware of forthcoming developments in healthcare and preparing for the future is desirable for health policy makers, whether developing healthcare policy, directing future research or commissioning health services. The use that health policy makers make of forecasting depends on having systems in place that receive and act on the information at an appropriate time. There are few examples of such systems in the published literature; ¹⁵ however the relationship between the UK's National Institute for Health and Care Excellence (NICE) and National Institute for Health Research (NIHR) Horizon Scanning Research and Intelligence Centre does provide a model of how shorter-term early awareness intelligence can shape prioritisation decisions. ¹⁶

We found that more than two thirds of the identified technologies were forecast for policy planning purposes and over half were forecast by governmental organisations, and that the majority of long-term forecasts were made by policy planning groups as opposed to research groups. This finding supports the premise that the majority of forecasting is carried out for service preparedness and long-term planning, and strategic decision making.⁵

Our study identified and classified a number of important health-related technologies, which health services may have already had to manage or will have to do so in the future. Our finding that nearly 60% of the technologies were either for the treatment and management of symptoms and disease or for the diagnosis and monitoring of disease can perhaps be explained by the methods used for forecasting. Many of the studies involved soliciting the opinion of experts and, although it is not possible to be certain about the areas of interest of those involved, their expertise may have made them more likely to focus on diagnosis and treatment than, for example, organisational programmes or rehabilitation. Regenerative medicine approaches were the most commonly forecast technologies by studies with a commercial intent. In contrast, drugs and related technologies (but not prophylactic vaccines) were the most common forecasts made by researchers.

The four clinical areas with the greatest number of forecast health technologies: infectious diseases, cancer, and circulatory and nervous system diseases and disorders, include many of the major causes of death and disability in countries today. Again we are not able to determine if this merely reflects the interests of the groups carrying out the forecasting and their areas of expertise or whether it truly represents the technology innovation frontier. It is understandable that the forecasts for infectious disease included many prophylactic vaccines as these have proven to be a cost effective preventive strategy for their prevention. This was also supported by our finding that forecasts of vaccine related technologies were only made by governmental agencies and policy research groups. In cancer, forecasting included both drugs and diagnostic tests and imaging, perhaps reflecting increasing targeting in novel cancer therapies. Several forecasts of regenerative medicine approaches for nervous system diseases and disorders is also interesting, with many of these diseases not currently curable or effectively treated. On the second several diseases and disorders is also interesting.

Our finding that forecasts which included creativity-based methods such as scenario building and analysis had, on the whole, longer forecast timeframes than studies that included evidence-based methods may have a rationale. Evidence-based methods require there to be research evidence on technologies which will therefore probably be nearer to any predicted impact. In contrast, creativity-based methods require experts to think more widely about what the future could be, and are not therefore constrained by what is actually being currently researched and published. This may also explain our finding that just over half of the short-term forecasts were made by research groups who may be more likely to use published evidence to inform their deliberations.

We believe that this is the first study to comprehensively identify and summarise health-related technologies predicted in past forecasting projects and to categorise and describe them. Although as many predicted topics as possible were included, we did exclude a substantial number. This was often because we could not envisage a future health application or because there was insufficient information to make a judgement (and many topics had very sparse titles or descriptive information). By excluding topics in this way, we may have excluded some that would have had an explicit health application within a reasonable timeframe. In addition, it is likely that we were unable to identify a number of relevant forecasts made by commercial organisations, which will have been conducted and disseminated in confidence.

Our description and classification of predicted health-related technologies from prior forecasting studies provides an overview of the technological and clinical frontiers of innovation in health and health care provision. To complete our evaluation of the accuracy of previous forecasting predictions and the forecasting methods used, the accuracy of the predictions made should also be assessed. This may be difficult across all technology types and clinical areas, but possible by limiting the evaluation to specific clinical areas and/or technology types or to those topics with more obvious health applications and timeframes that have already occurred.

CONTRIBUTERS

All authors have directly participated in the planning and execution of the study. LD extracted the study data. LD and CP independently reviewed the technologies to be

included. LD and CP drafted the paper and DW, SS and AS critically revised the manuscript. All authors agreed the final version of the paper. All authors had full access to all of the data.

DISCLAIMER

This report presents independent research funded by the National Institute for Health Research (NIHR). The views expressed in this publication are those of the authors and not necessarily those of the National Health Service, the NIHR or the Department of Health.

COMPETING INTERESTS

The authors report that they do not have any conflicts of interest.

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DATA SHARING

A full list of health technologies included in the study is available in a supplemental document submitted with this article. More details on data are available from the corresponding author at I.doos@bham.ac.uk.

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Table 1: The 15 forecasting studies identified in the prior systematic review

Study name or first author	Year of forecast	Country
Dutch Steering Committee on Future Health Scenarios (STG) 1988	1986	Netherlands
Spiby, 1988	1988	UK
Loveridge et al 1995	1994	UK
Stevens et al, 1997	1995	UK
Karim, National Research and Technology Foresight Project, 1999	1996	South Africa
Operating theatre of the year 2010; Department of Trade and Industry report 1999	1996	UK
Cahill and Scapolo, 1999	1998	Europe
Daar et al, 2002	2002	Developing countries
Technology foresight towards 2020_China	2003	China
British Telecommunications (BT) calendar	1997 & 2005	United Kingdom (UK)
Tremblay and Yiu, 2006	2006	Canada
Food and Drug Administration (FDA) surveys	1998 & 2008	United States of America (USA)
Institute of the Future, 2009	2009	USA
Science & Technology Foresight Survey, 2010	Every 5 years from 1971, latest survey 2009-10	Japan
UK technology and innovation futures for the 2020s, 2010	2010	UK

Source: Doos et al 20169

Table 2: Health technologies by technology type

Technology type	Number	%
Diagnostic tests and imaging	131	19.1
Devices and biomaterials	98	14.3
IT systems, eHealth and mHealth	86	12.6
Drugs (not prophylactic vaccines)	82	12.0
Regenerative medicine	80	11.7
Medical equipment	37	5.4
Therapeutic procedures	36	5.3
Unknown	33	4.8
Organisational programmes	26	3.8
Prophylactic vaccines	24	3.5
Population programmes	24	3.5
Non-surgical therapy	15	2.2
Other	9	1.3
Assistive devices	4	0.6
Total	685	100.0

Table 3: Technology type by forecasting group

T 11	Forecasting group							
Technology type	Commercial organisation	Consultancy agency	Governmental agency	Independent non-profit organisation	Researchers	Policy research group	Total	
Assistive devices	3 (3.2%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (0.6%)	
Devices & biomaterials	16 (16.8%)	6 (10.9%)	56 (15.6%)	3 (17.6%)	7 (11.5%)	10 (10.1)	98 (14.3%)	
Diagnostic tests & imaging	6 (6.3%)	26 (47.3%)	63 (17.6%)	3 (17.6%)	9 (14.8%)	24 (24.2%)	131 (19.1)	
Drugs (non- prophylactic vaccine)	7 (7.4%)	2 (3.6%)	31 (8.7%)	1 (5.9%)	22 (36.1%)	19 (19.2%)	82 (12.0%)	
IT systems, eHealth, mHealth	18 (18.9%)	7 (12.7%)	43 (12.0%)	3 (17.6%)	3 (4.9%)	12 (12.1%)	86 (12.6%)	
Medical equipment	2 (2.1%)	5 (5.5%)	31 (8.7%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	37 (5.4%)	
Non-surgical therapy	1 (1.1%)	0 (0.0%)	9 (2.5%)	1 (5.9%)	3 (4.9%)	1 (1.0%)	15 (2.2%)	
Population programme	5 (5.3%)	0 (0.0%)	9 (2.5%)	3 (17.6%)	1 (1.6%)	6 (6.1%)	24 (3.5%)	

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Total	95 (100%)	55 (100%)	358 (100%)	17 (100%)	61 (100%)	99 (100%)	685 (100%)
Others	4 (4.2%)	1 (1.8%)	2 (0.6%)	0 (0.0%)	0 (0.0%)	2 (2.0%)	9 (1.3%)
Unknown	9 (9.5%)	2 (3.6%)	16 (4.5%)	1 (5.9%)	1 (1.6%)	4 (4.0%)	33 (4.8%)
Organisational programme	2 (2.1%)	10 (10.6%)	11 (3.1%)	1 (5.9%)	4 (6.6%)	2 (2.0%)	26 (3.8%)
Therapeutic procedure	0 (0.0%)	1 (1.8%)	20 (5.6%)	0 (0.0%)	6 (9.8%)	9 (9.1%)	36 (5.3%)
Regenerative Medicine	22 (23.2%)	1 (1.8%)	48 (13.4%)	1 (5.9%)	4 (6.6%)	4 (4.0%)	80 (11.7%)
Prophylactic vaccine	0 (0.0%)	0 (0.0%)	18 (5.0%)	0 (0.0%)	0 (0.0%)	6 (6.1%)	24 (3.5%)

Table 4: Technology type and purpose for the five most common ICD_10 chapter headings

	Infectious	Cancer	Circulatory	Nervous	Health status,	
	disease	ICD_II	disorders	system	screening,	
Technology type	ICD_I		ICD_IX	ICD_VI	rehab ICD_XXI	Total
Assistive devices	-	-	-	-	3 (8.6)	3 (1.5)
Diagnostic tests and imaging	5 (10.4)	12 (30.0)	7 (18.4)	6 (16.7)	2 (5.7)	32 (16.2)
Devices and biomaterials	3 (6.3)	1 (2.5)	10 (26.3)	9 (25.0)	11 (31.4)	34 (17.3)
IT systems, eHealth and mHealth	146	-	-	1 (2.8)	3 (8.6)	4 (2.0)
Drugs (not prophylactic vaccines)	10 (20.8)	16 (40.0)	7 (18.4)	2 (5.6)	5 (14.3)	40 (20.3)
Regenerative medicine	-	2 (5.0)	7 (18.4)	9 (25.0)	-	18 (9.1)
Medical equipment	2 (4.2)	-	-	1 (2.8)	1 (2.9)	4 (2.0)
Therapeutic procedures	1 (2.1)	1 (2.5)	3 (7.9)	4 (11.1)	-	9 (4.6)
Organisational programmes	3 (6.3)	-	- /	-	1 (2.9)	4 (2.0)
Prophylactic vaccines	22 (45.8)	-	- (-	1 (2.9)	23 (11.7)
Population programmes	1 (2.1)	2 (5.0)	2 (5.3)	1 (2.8)	3 (8.6)	9 (4.6)
Non-surgical therapy	-	2 (5.0)		1 (2.8)	-	3 (1.5)
Other/ unknown	1 (2.1)	4 (10.0)	2 (5.3)	2 (5.6)	5 (14.3)	14 (7.1)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)
Technology purpose						
Diagnosis & monitoring of disease	7 (14.6)	12 (30.0)	8 (21.1)	7 (19.4)	1 (2.9)	35 (17.8)
Health promotion & disease prevention	29 (60.4)	5 (12.5)	5 (13.2)	1 (2.8)	18 (51.4)	58 (29.4)

Treatment & disease management	11 (22.9)	22 (55.0)	25 (65.8)	22 (61.1)	1 (2.9)	81 (41.1)
Rehabilitation	0 (0.0)	0 (0.0)	0 (0.0)	4 (11.1)	15 (42.9)	19 (9.6)
Other and unknown	1 (2.1)	1 (2.5)	0 (0.0)	2 (5.6)	0 (0.0)	4 (2.0)
Total	48 (100%)	40 (100%)	38 (100%)	36 (100%)	35 (100%)	197 (100%)

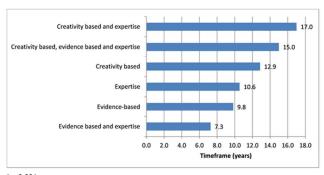
Table5: Mean technology prediction timeframe (years) by technology type*

	Number	Mean timeframe
Technology type		Years (SD)
Non-surgical therapy	14	9.07 (5.7)
Diagnostic tests and imaging	113	10.11 (6.0)
Drugs (not prophylactic vaccines)	75	10.31 (6.3)
Therapeutic procedures	31	10.45 (8.2)
Organisational programmes	25	10.48 (5.3)
IT systems, eHealth and mHealth	77	11.08 (5.5)
Devices and biomaterials	88	11.93 (6.8)
Assistive devices	3	12.33 (17.9)
Other/ unknown	40	13.35 (7.2)
Medical equipment	36	13.53 (2.7)
Regenerative medicine	73	13.58 (7.4)
Prophylactic vaccines	13	14.00 (6.3)
Population programmes	19	14.53 (5.9)
Total	607	11.59 (6.6)

^{*}p<0.002

Figure 1: Mean forecast timeframe by methods of forecasting*

Figure 1: Mean forecast timeframe by methods of forecasting*



*p<0.001

81x60mm (300 x 300 DPI)

Report name (year)	Intention of the study	Technology Name	Tech. time frame	Purpose of the technology	Specialty	Technology type
BT Calendar 1997	Commercial	Artificial muscle use in place of heart transplants	1	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
BT Calendar 1997	Commercial	Telemed link to home with home blood test kit	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial intelligence based elderly and handicapped support devices	1	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial pancreas	1	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 1997	Commercial	Artificial blood	3	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 1997	Commercial	Disability assistance devices using thought recognition	3	Rehabilitation	XXI - screening, rehab	Assistive devices
BT Calendar 1997	Commercial	Artificial ears	3	Rehabilitation	VIII - ear	Regenerative medicine
BT Calendar 1997	Commercial	Electronic implants used to stimulate muscles in disabled people	5	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
BT Calendar 1997	Commercial	Home (health) diagnostic systems, daily/real time check-up	1	Diagnosis and monitoring of disease	Other - generic	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Virtual Reality based exercisers in homes	1	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Synthetic retinal implants for simple vision	8	Rehabilitation	VII - eye	Regenerative medicine
BT Calendar 1997	Commercial	Personal wearable health monitor	6	Health promotion and prevention of disease	XXI - screening, rehab	IT systems, eHealth and mHealth
BT Calendar 1997	Commercial	Artificial heart	13	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine

BT Calendar 1997	Commercial	Genetic screening	10	Health promotion	XXI -	Population
		widely used		and prevention of disease	screening, rehab	programmes
BT Calendar 1997	Commercial	Fine particle beam	12	Treatment and	Other -	Regenerative
Bi Calcildai 1997	Commercial	gene engineering	12	management of	generic	medicine
		Serie crismeering		symptoms and	generie	medicine
				disease		
BT Calendar 1997	Commercial	Artificial senses,	15	Rehabilitation	XXI -	Devices and
		sensors directly			screening,	biomaterials
		stimulating nerves			rehab	
BT Calendar 1997	Commercial	Prevention of	16	Health promotion	II - cancers	Population
		cancer		and prevention of		programmes
)		disease		
BT Calendar 1997	Commercial	Custom foods for	13	Treatment and	Other -	Other
		particular medical		management of	generic	
		conditions will		symptoms and		
BT Calendar 1997	Comercancial	exist.	22	disease	V - mental	Denulation
Bi Calendar 1997	Commercial	Genetic programs to enhance	23	Health promotion and prevention of	health	Population
		human well-being		disease	Health	programmes
BT Calendar 1997	Commercial	Artificial lungs	18	Treatment and	X -	Regenerative
Br calcilaar 1997	Commercial	7 ti ciriciai iangs	10	management of	respiratory	medicine
				symptoms and	respiratory	The dienie
				disease		
BT Calendar 1997	Commercial	Artificial kidneys	18	Treatment and	XIV -	Regenerative
				management of	genitourina	medicine
				symptoms and	ry	
				disease		
BT Calendar 1997	Commercial	Artificial brain	20	Treatment and	VI -	Regenerative
		cells		management of	nervous	medicine
				symptoms and		
DT Calandar 1007	Camananaial	A	22	disease	VI CI too ot	Danas anatica
BT Calendar 1997	Commercial	Artificial liver	23	Treatment and	XI - GI tract,	Regenerative
				management of symptoms and	dental health	medicine
				disease	licaitii	
BT Calendar 1997	Commercial	Extension of	23	Health promotion	XXI -	Unknown
23.0		average lifespan		and prevention of	screening,	
		to over 100		disease	rehab	
BT Calendar 1997	Commercial	Artificial brain	28	Treatment and	VI -	Regenerative
		implants		management of	nervous	medicine
				symptoms and		
				disease		
BT Calendar 1997	Commercial	Artificial	28	Treatment and	VI -	Regenerative
		peripheral nerves		management of	nervous	medicine
				symptoms and		
BT Calendar 1997	Commercial	Artificial lags	22	disease	XXI -	Unknown
DI Calelluar 1997	Commercial	Artificial legs	33	Rehabilitation	screening,	OHKHOWH
					rehab	
1	I		1		, CHUD	

BT Calendar 1997	Commercial	Fully functional	33	Treatment and	VII - eye	Regenerative
Bi Calendar 1997	Commerciai		33		vii - eye	medicine
		artificial eyes		management of		medicine
				symptoms and		
DT Calaraday 2005	Compression	leasure attitude of	1	disease	O+b - :-	du
BT Calendar 2005	Commercial	laser activated	3	Treatment and	Other -	drugs (not
		drug capsules		management of	generic	prophylactic
				symptoms and		vaccines)
				disease		
BT Calendar 2005	Commercial	ultrasound or	3	Treatment and	Other -	drugs (not
		radio activated		management of	generic	prophylactic
		capsules		symptoms and		vaccines)
				disease		
BT Calendar 2005	Commercial	blood analysis	3	Diagnosis and	Other -	Diagnostic tests
		chips		monitoring of	generic	and imaging
				disease		
BT Calendar 2005	Commercial	e-Baybies	5	Health promotion	XXI -	Unknown
		electronic		and prevention of	screening,	
		conception		disease	rehab	
BT Calendar 2005	Commercial	Instant electronic	5	Diagnosis and	1-	Diagnostic tests
		identification of		monitoring of	infections	and imaging
		pathogens		disease		
BT Calendar 2005	Commercial	Online surgeries	5	Supporting the	Other -	IT systems, eHealth
		dominate first line		provision of care	generic	and mHealth
		medical care		and/or increasing	o .	
				service efficiency		
BT Calendar 2005	Commercial	active skin	5	Unknown	XII - skin	Unknown
Jaicilaai 2003	Commercial	active skill	3	Olikilowii	VII - 2KIII	OHKHOWH
BT Calendar 2005	Commercial		5		Other -	
		Cyber-drugs		Treatment and	Other -	Drugs (not
		Cyber-drugs (electronically		Treatment and management of		Drugs (not prophylactic
		Cyber-drugs		Treatment and management of symptoms and	Other -	Drugs (not
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs)		Treatment and management of	Other - generic	Drugs (not prophylactic vaccines)
		Cyber-drugs (electronically	5	Treatment and management of symptoms and disease Treatment and	Other -	Drugs (not prophylactic vaccines) Devices and
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and management of	Other - generic	Drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and	Other - generic	Drugs (not prophylactic vaccines) Devices and
BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines) Devices and biomaterials
BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion	Other - generic XIX - injury	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical
BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of	Other - generic XIX - injury XI - GI tract,	Drugs (not prophylactic vaccines) Devices and biomaterials
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy
BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary	5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion	Other - generic XIX - injury XI - GI tract, dental health XXI -	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening,	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner	5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and	Other - generic XIX - injury XI - GI tract, dental health XXI - screening,	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 BT Calendar 2005 BT Calendar 2005 BT Calendar 2005	Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor medication taking	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving care (designed to	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	
BT Calendar 2005 Commercial Commercial Commercial	Cyber-drugs (electronically activated drugs) automated pain relief for soldiers bacteria in toothpaste to attack plaque e-baybies, binary conception hand-held scanner to detect tumours using tissue resonance interferometer smart pill bottles remotely monitor	5 5 5	Treatment and management of symptoms and disease Treatment and management of symptoms and disease Health promotion and prevention of disease Health promotion and prevention of disease Diagnosis and monitoring of disease Supporting patients receiving	Other - generic XIX - injury XI - GI tract, dental health XXI - screening, rehab II - cancers	Drugs (not prophylactic vaccines) Devices and biomaterials Non-surgical therapy Unknown Diagnostic tests and imaging	

BT Calendar 2005	Commercial	diabetes cure via stem cell research	5	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
BT Calendar 2005	Commercial	Use of human's own tissues to grow replacement organs	8	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	Artificial senses	8	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
BT Calendar 2005	Commercial	context sensitive cyber drugs	8	Treatment and management of symptoms and disease	Other - generic	Unknown
BT Calendar 2005	Commercial	electronic stimulation of brain sensations as recreational substitute for drugs	8	Other	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Custom (GM) foods for particular medical conditions will exist.	8	Treatment and management of symptoms and disease	Other - generic	Other
BT Calendar 2005	Commercial	Gene-gel stimulation of re- growth of natural teeth on demand	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	retina regeneration using foetal retinal cell injection	8	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	tooth regeneration	8	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
BT Calendar 2005	Commercial	plastic bones	8	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
BT Calendar 2005	Commercial	emotionally specific drugs	8	Unknown	V - mental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	synthetic organs by printing layers of cells	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
BT Calendar 2005	Commercial	synthetic viruses	10	Unknown	1-	Other

					infections	
BT Calendar 2005	Commercial	sensory augmentation using sensory implants, nanoparticles etc	10	Rehabilitation	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	use of stem cells in brain after strokes or accidents	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	gene therapy generates new hair cells in humans	10	Treatment and management of symptoms and disease	XII - skin	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	artificial sensors used in cosmetic upgrade surgery	13	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
BT Calendar 2005	Commercial	Electronic memory enhancement	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	Nanobots in toothpaste attack plaque	20	Health promotion and prevention of disease	XI - GI tract, dental health	drugs (not prophylactic vaccines)
BT Calendar 2005	Commercial	Fully functioning artificial eyes	20	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
BT Calendar 2005	Commercial	electronic brain implants	20	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
BT Calendar 2005	Commercial	Intelligence or memory enhancement by external means	20	Unknown	Other - generic	Unknown
BT Calendar 2005	Commercial	e-baybies, genetic conception	20	Health promotion and prevention of disease	XXI - screening, rehab	Unknown
BT Calendar 2005	Commercial	synthetic immune system	20	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
BT Calendar 2005	Commercial	Artificial peripheral nerves	30	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
BT Calendar 2005	Commercial	e-baybies, digital emulation conception	30	Health promotion and prevention of disease	XXI - screening, rehab	Unknown

	T	1	1 _	1		T.=
BT Calendar 2005	Commercial	Electronic	3	Supporting the	Other -	IT systems, eHealth
		prescriptions		provision of care	generic	and mHealth
		reduce fraud and		and/or increasing		
		improve speed		service efficiency		
BT Calendar 2005	Commercial	24/7 blood	3	Diagnosis and	Other -	Diagnostic tests
		chemistry		monitoring of	generic	and imaging
		monitoring		disease		
BT Calendar 2005	Commercial	supermarkets	3	Health promotion	Other -	Other
		used as major		and prevention of	generic	
		source of medical		disease	0	
		alerts				
BT Calendar 2005	Commercial	Expert systems	5	Supporting	Other -	IT systems, eHealth
Di Calcilaai 2005	Commercial	used extensively		patients receiving	generic	and mHealth
		in GP surgeries		care (designed to	generic	and minearm
		iii GP surgeries				
				be used by		
DT C-112005	6	Harrist I	_	individuals)	Other	1
BT Calendar 2005	Commercial	Hospitals use	5	Supporting the	Other -	IT systems, eHealth
		virtual queuing		provision of care	generic	and mHealth
		systems		and/or increasing		
				service efficiency		
BT Calendar 2005	Commercial	Neural networks	5	Supporting the	Other -	IT systems, eHealth
		used for patient		provision of care	generic	and mHealth
		appointment		and/or increasing		
		management		service efficiency		
BT Calendar 2005	Commercial	Multimedia	5	Supporting	Other -	IT systems, eHealth
		patient records		patients receiving	generic	and mHealth
		'		care (designed to		
				be used by		
				individuals)		
BT Calendar 2005	Commercial	Lifestyle	5	Health promotion	Other -	Population
Di Galeridai 2000	Commercial	monitoring and		and prevention of	generic	programmes
		insurance linked		disease	generic	programmes
		to medical records		uisease		
BT Calendar 2005	Commercial	antibacterial	5	Health promotion	1-	Devices and
BT Caleffual 2005	Commercial		5			
		coatings on		and prevention of	infections	biomaterials
		domestic		disease		
		appliances,				
		phones etc,				
		especially in				
		hospitals				
BT Calendar 2005	Commercial	flexible displays	5	Diagnosis and	Other -	IT systems, eHealth
		used for body		monitoring of	generic	and mHealth
		monitoring and		disease		
		alerts				
BT Calendar 2005	Commercial	emotion alerts	5	Health promotion	Other -	Devices and
				and prevention of	generic	biomaterials
				disease		
BT Calendar 2005	Commercial	(drug shortages	5	Diagnosis and	Other -	IT systems, eHealth
25.250. 2000		caused by)		monitoring of	generic	and mHealth
		internet diagnosis		disease	00	and milearen
		Internet diagnosis		uisease		

BT Calendar 2005	Commercial	MRSA detection	5	Diagnosis and	1-	Population
		chips on sale in		monitoring of	infections	programmes
		high street		disease		
BT Calendar 2005	Commercial	Devices roaming	8	Unknown	Other -	Devices and
		within blood			generic	biomaterials
		vessels under own				
BT Calendar 2005	Commercial	power Operations	8	Supporting	Other -	IT systems, eHealth
Bi Calefidai 2003	Commercial	videoed and	8	patients receiving	generic	and mHealth
		stored as part of		care (designed to	generie	and mireatin
		medical record		be used by		
				individuals)		
BT Calendar 2005	Commercial	Direct electronic	8	Other	V - mental	IT systems, eHealth
		pleasure			health	and mHealth
		production				
BT Calendar 2005	Commercial	Orgasm by email	8	Supporting	XIV -	IT systems, eHealth
	,			patients receiving	genitourina	and mHealth
				care (designed to	ry	
				be used by		
			_	individuals)		
BT Calendar 2005	Commercial	Artificial senses,	8	Rehabilitation	XXI -	Devices and
		sensors directly			screening,	biomaterials
DT Calandar 2005	Camanaanaial	stimulating nerves	0	Tuestassatond	rehab	Davissasand
BT Calendar 2005	Commercial	Smart membranes for remote control	8	Treatment and	Other -	Devices and biomaterials
		of drug injection		management of symptoms and	generic	Diomaterials
		or drug injection		disease		
BT Calendar 2005	Commercial	Domestic bacterial	8	Health promotion	1-	Diagnostic tests
Br Gareriaar 2000	Commercial	detection devices		and prevention of	infections	and imaging
				disease		
BT Calendar 2005	Commercial	Micro-fluidic chips	8	Diagnosis and	Other -	Diagnostic tests
		used for gene		monitoring of	generic	and imaging
		sequencing in		disease		
		every GP surgery				
BT Calendar 2005	Commercial	Self certification	8	Supporting	Other -	IT systems, eHealth
		for prescriptions		patients receiving	generic	and mHealth
		using electronic		care (designed to		
		diagnostics		be used by		
BT Calendar 2005	Commercial	Visitor sanitising	8	individuals)	1-	Organisational
Bi Calendar 2005	Commerciai	in hospitals	8	Health promotion and prevention of	infections	Organisational
		iii iiospitais		disease	intections	programmes
BT Calendar 2005	Commercial	Outpatients at	8	Supporting	Other -	IT systems, eHealth
3. Ca.c.idai 2003		home - remote		patients receiving	generic	and mHealth
		tele-medical		care (designed to	J	
		consultations		be used by		
				individuals)		
BT Calendar 2005	Commercial	Individual's	8	Supporting	Other -	Organisational
		genome part of		patients receiving	generic	programmes
		their medical		care (designed to		
		record		be used by		

				individuals)		
BT Calendar 2005	Commercial	Portable bactericidal	10	Health promotion and prevention of	I - infections	Medical equipment
BT Calendar 2005	Commercial	devices Bactericidal saws incorporated onto materials in hospitals	10	disease Health promotion and prevention of disease	I - infections	Devices and biomaterials
BT Calendar 2005	Commercial	Robotic cleaners in hospitals	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Daar et al 2002	Research	Modified molecular technologies for affordable, simple diagnosis of infectious diseases	8	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Daar et al 2002	Research	Recombinant technologies to develop vaccines against infectious diseases	8	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Daar et al 2002	Research	Technologies for more efficient drug and vaccine delivery systems	8	Treatment and management of symptoms and disease	Other - generic	Unknown
Daar et al 2002	Research	Technologies for environmental improvement (sanitation, clean water, bioremediation)	8	Health promotion and prevention of disease	Other - generic	Unknown
Daar et al 2002	Research	Female-controlled protection against sexually transmitted diseases, both with and without contraceptive effect	8	Health promotion and prevention of disease	XIV - genitourina ry	Devices and biomaterials
Daar et al 2002	Research	Genetically modified crops with increased nutrients to counter specific deficiencies	8	Health promotion and prevention of disease	IV - endocrine	Unknown

Daar et al 2002	Research	Recombinant technology to make therapeutic products (for example, insulin, interferons) more affordable	8	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Karim2000	Policy planning	Telemedicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Medical databases	15	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	Expert System in managed care and preventive medicine	15	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Karim2000	Policy planning	diagnostic procedures (e.g. recombinant DNA techniques for parental screening)	15	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Karim2000	Policy planning	Therapeutic procedures (e.g. microsurgery and implanted muscle stimulators).	15	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Karim2000	Policy planning	Nanotechnology (e.g. devices which interact with tissues within the body to boost the immune system).	15	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Karim2000	Policy planning	Vaccines against infectious diseases	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of an AIDS vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Development of a TB vaccine	15	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Karim2000	Policy planning	Health promotion targeted at the youth	15	Health promotion and prevention of disease	Other - generic	Population programmes

Karim2000	Policy	Development of	15	Health promotion	Other -	Population
	planning	enriched and		and prevention of	generic	programmes
		fortified staple		disease		
		foods				
Karim2000	Policy	Development of a	15	Health promotion	1-	Prophylactic
	planning	malaria vaccine		and prevention of	infections	vaccines
				disease		
Karim2000	Policy	Development of	15	Diagnosis and	Other -	Diagnostic tests
	planning	on-site diagnostic		monitoring of	generic	and imaging
.,		tools	1	disease	200	
Karim2000	Policy	Development of	15	Health promotion	XXI -	drugs (not
	planning	female		and prevention of	screening,	prophylactic
	- "	contraceptives	<u> </u>	disease	rehab	vaccines)
Karim2000	Policy	Development of	15	Health promotion	1-	Devices and
	planning	barrier methods		and prevention of	infections	biomaterials
		and microbicides		disease		
		for sexually				
		transmitted				
		diseases and HIV				
Karim2000	Policy	Development of	15	Treatment and	1-	drugs (not
	planning	malaria drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Development of	15	Treatment and	1-	drugs (not
	planning	new TB drugs		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Karim2000	Policy	Self management	15	Supporting	Other -	Organisational
	planning	tools for chronic		patients receiving	generic	programmes
		diseases (e.g.		care (designed to		
		hypertension,		be used by		
		diabetes,		individuals)		
		diarrhoea,				
		psychiatric				
W12000	D. II.	conditions)	45	To a land	Other	D
Karim2000	Policy	Tissue	15	Treatment and	Other -	Regenerative
	planning	regeneration and		management of	generic	medicine
		gene therapy		symptoms and		
Chiny 1000	Dosoorah	Monoslansi	0	disease	Other -	Diagnostic tests
Sbipy 1988	Research	Monoclonal antibodies will be	0	Diagnosis and		Diagnostic tests
		used in:		monitoring of disease	generic	and imaging
				uisease		
		Histopathological				
Chiny 1000	Research	techniques Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
Sbipy 1988	neseaitii	antibodies will be	0	monitoring of		Diagnostic tests and imaging
		used in:		disease	generic	and imaging
		Biochemical		いいとはいと		
		techniques				
Sbipy 1988	Research	Monoclonal	0	Diagnosis and	Other -	Diagnostic tests
201h X 1200	Nesealcii			_		_
		antibodies will be		monitoring of	generic	and imaging

		used in: in-vivo diagnostic		disease		
Sbipy 1988	Research	Monoclonal antibodies will be used in: Identification and localization of tumours	0	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: diagnostic microbiology	0	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: diagnostic virology	0	Diagnosis and monitoring of disease	I - infections	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: To screen for potentially deleterious genes*	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Gene probes will be used in: Diagnosing most genetic disorders	10	Diagnosis and monitoring of disease	XVII - congenital	Diagnostic tests and imaging
Sbipy 1988	Research	Genetic engineering will enable the isolation of high risk groups for common diseases	10	Health promotion and prevention of disease	Other - generic	Population programmes
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Ultrasound	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Doppler measurement	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: CT scanning	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Sbipy 1988	Research	Imaging techniques will be in widespread and	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
		less hazardous use including: NMR scanning				
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Nuclear medicine	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Positron detection*	0	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Imaging techniques will be in widespread and less hazardous use including: Three- dimensional dynamic imaging	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Drug therapy will be enhanced by: Genetic engineering	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug therapy will be enhanced by: Monoclonal antibodies used for drug targeting	10	Treatment and management of symptoms and disease	Other - generic	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Drug delivery devices with or without in-vivo sensors	10	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Viral infections	0	Treatment and management of symptoms and disease	I - infections	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will be available for: Autoimmune diseases (monoclonal antibodies)	10	Treatment and management of symptoms and disease	III - blood	drugs (not prophylactic vaccines)
Sbipy 1988	Research	More effective Therapeutics will	0	Treatment and management of	IX - circulation	drugs (not prophylactic

		be available for: Heart failure (better drugs)		symptoms and disease		vaccines)
Sbipy 1988	Research	More effective Therapeutics will be available for: Obstructive arterial lesions (by removal and control of platelets and synthetic vascular prostheses)	10	Treatment and management of symptoms and disease	IX - circulation	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Cancer (hyperthermia, growth regulation factors and monoclonal antibodies)	10	Other	II - cancers	Other
Sbipy 1988	Research	Cardiac arrhythmias (implantable mechanisms)	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Arthritic joints (more biocompatible prosthetic materials and a wider range of joint replacements)	0	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Incontinence (stimulation via implantable electrodes)	0	treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Disability (wider range of flow technology aids and biological servomechanisms linked to computers and	0	Rehabilitation	Other - generic	Other

		robotics)				
Sbipy 1988	Research	More effective Therapeutics will be available for: Limb damage (permanent internal bone repair)	0	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Sbipy 1988	Research	More effective Therapeutics will be available for: Tropical parasitic diseases (vaccines)	0	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Sbipy 1988	Research	More effective Therapeutics will be available for: Mental disorders (neurotransmitter s)	10	Treatment and management of symptoms and disease	V - mental health	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Laser microsurgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser endoscopic surgery	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Laser angioplasty and angiography	0	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Sbipy 1988	Research	Other laser and endoscopic surgical techniques	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Cryosurgery	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Lithotripsy	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Sbipy 1988	Research	Transplantation will be enhanced by better techniques	0	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials

Sbipy 1988	Research	enabling long term in-vitro organ preservation and the prevention of rejection Bone marrow transplantation with purified stem cells and autologous material will be	0	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Sbipy 1988	Research	available A safe male pill for long-term use will be available	10	Health promotion and prevention of disease	XXI - screening, rehab	drugs (not prophylactic vaccines)
Sbipy 1988	Research	Improved techniques for detecting ovulation will enhance natural family planning*	0	Diagnosis and monitoring of disease	XIV - genitourina ry	Diagnostic tests and imaging
Sbipy 1988	Research	Optical disc storage and communication will be used with X-rays and other diagnostic images	0	Supporting the provision of care and/or increasing service efficiency	Other - generic	Diagnostic tests and imaging
Sbipy 1988	Research	Computers will be used by clinical departments for data collection	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Expert interrogation will be possible due to data centralization	0	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Patient interviewing systems will be available in the surgery and in patients' homes	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Sbipy 1988	Research	Expert systems will enable diagnosis and define the most applicable treatment	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth

Sbipy 1988	Research	Linkage of computerized patient data will be available between all hospital, community and primary care services and settings	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Life style changing behaviours	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Screening for phenylketonuria	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Screening for congenital hypothyroidism	N/A	Health promotion and prevention of disease	IV - endocrine	Population programmes
STG 1988	Policy planning	Blood pressure can be checked by self-service meters	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	High serum cholesterol can be checked by fingerprick blood test	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	Certain cancer tests can be self- administered	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Improved diagnostic tests may be available for widespread use for screening at the community level	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Improved vaccine against cholera in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New malaria vaccine in the tropical developing countries	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against hepatitus B	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines

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STG 1988	Policy planning	New vaccine against respiratory syncytial virus	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against influenza	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against AIDS	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	New vaccine against cytomegalovirus	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Better vaccine against Perussis	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Oral administration or administartion by nasal spray will facilitate mass immunization	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Creating vaccines containing antigens for several organisms given together (e.g. DPTPM)	N/A	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
STG 1988	Policy planning	Shifts in diet toward lower intake of fat especially saturated fat	N/A	Health promotion and prevention of disease	Other - generic	Population programmes
STG 1988	Policy planning	Reliable and simple test for cholesterol	N/A	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
STG 1988	Policy planning	More effective and safer drugs for treatment of elevated cholesterol	N/A	Health promotion and prevention of disease	IX - circulation	drugs (not prophylactic vaccines)
STG 1988	Policy planning	Technologies for home use without professional supervision (e.g. home diagnostic kits)	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Disease conditions will be monitored from distant professional sites	N/A	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
				,		
STG 1988	Policy planning	Robotics will be used for mobility and assistance at home such as nutrition and cleaning	N/A	Rehabilitation	Other - generic	Assistive devices
STG 1988	Policy planning	Regeneration of central nervous system through the use of nerve growth factors or transplant neurotransmitter-producing cells into the brain	N/A	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
STG 1988	Policy planning	Grafting of the spinal cord or the peripheral nervous system	N/A	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
STG 1988	Policy planning	More safer & effective contraception	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Contraceptive vaccine	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Prophylactic vaccines
STG 1988	Policy planning	Alternatives to surgical abortion such as combination of antiprogestins and prostaglandins	N/A	Treatment and management of symptoms and disease	XV - pregnancy	drugs (not prophylactic vaccines)
STG 1988	Policy planning	Treatment of infertility using new technologies such as in vitro fertilization, surrogate motherhood, freezing of germ cells and embro with embryo transfer	N/A	Treatment and management of symptoms and disease	XIV - genitourina ry	Other
STG 1988	Policy planning	Fetal cells can be isolated from the mother's bloodstream as a method for prenatal screening	N/A	Health promotion and prevention of disease	XXI - screening, rehab	Diagnostic tests and imaging

STG 1988	Policy	Metabolic,	N/A	Diagnosis and	Other -	Diagnostic tests
	planning	physiologic information can be obtained by spectroscopy		monitoring of disease	generic	and imaging
STG 1988	Policy planning	Data from CT scanner will be stored on a disk, transmit by a phone line or othe communication	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Film may disappear and computer will directly interpret the diagnosis	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Biosensors to monitor disease condition or results of therapy (e.g. diabetes)	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Tumor markers that can be measured in blood	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Flow cytometer will be used in transplantation or monitoring of cancer therapy	N/A	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
STG 1988	Policy planning	Monoclonal antibodies for diagnosis such as colon cancer and area of cardiac infarctions	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Human gene therapy for a wide variety of diseases including cancer, diabetes, cardiovascular and affective disorders such as depression	N/A	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
STG 1988	Policy planning	DNA probe for intra-uterine diagnosis of genetic diseases	N/A	Diagnosis and monitoring of disease	XVII - congenital	Diagnostic tests and imaging
STG 1988	Policy planning	Home diagnostic kits for sexually	7	Diagnosis and monitoring of	I - infections	Organisational programmes

		transmitted diseases and hepatitits		disease		
STG 1988	Policy planning	Home diagnostic kits for screening for cancer	7	Diagnosis and monitoring of disease	I - infections	Organisational programmes
STG 1988	Policy planning	Home diagnostic kits to test for common diseases with genetic basis such as diabetes	N/A	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
STG 1988	Policy planning	Genetic insertion therapy for treatment of certain blood disorders such as thalassaemia and sickle cell anaemia	N/A	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
STG 1988	Policy planning	Oral treatment forms for hormones, enzymes and other peptides may be developed	N/A	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for asthma	N/A	Treatment and management of symptoms and disease	X - respiratory	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	New drugs for coronary artery diseases	N/A	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Monoclonal antibodies to replace immune globulins	N/A	Treatment and management of symptoms and disease	III - blood	Drugs (not prophylactic vaccines)
STG 1988	Policy planning	Cloning of skin	N/A	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
STG 1988	Policy planning	Growth of retinal tissue and corneal endothelium	N/A	Treatment and management of symptoms and disease	VII - eye	Regenerative medicine
STG 1988	Policy planning	Total body irradiation for transplant (to prevent rejection)	N/A	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
STG 1988	Policy planning	Artificial heart	N/A	Treatment and management of symptoms and	IX - circulation	Regenerative medicine

				disease		
STG 1988	Policy planning	Artificial pancreas	N/A	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
STG 1988	Policy planning	Shoulder joint replacement	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Cochlear implants	N/A	Treatment and management of symptoms and disease	VIII - ear	Devices and biomaterials
STG 1988	Policy planning	Coating of implant materials to improve acceptability	N/A	Other	Other - generic	Devices and biomaterials
STG 1988	Policy planning	Functional electrical stimulation in prosthetics allowing brain to control the action	N/A	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
STG 1988	Policy planning	Prostheic fingers	N/A	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Organ transplant and improvement of functional activities of organs (pancreas, bone, small bowel, endocine glands)	N/A	Treatment and management of symptoms and disease	Other - generic	Other
STG 1988	Policy planning	Microprocessor to restore damaged areas of the brain	N/A	Rehabilitation	VI - nervous	Devices and biomaterials
STG 1988	Policy planning	Laser cytofluorometry will be used to identify RNA and DNA in the plasma	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser doppler to measure blood flow in the retina	N/A	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
STG 1988	Policy planning	Laser to stop gastrointestinal bleeding	N/A	Treatment and management of symptoms and disease	XI - GI tract, dental health	Therapeutic procedures

STG 1988	Policy	Laser to break	N/A	Treatment and	XIV -	Therapeutic
310 1300	·		IN/A			procedures
	planning	urinary stones		management of	genitourina	procedures
				symptoms and disease	ry	
STG 1988	Policy	Laser surgery	N/A	Treatment and	Other -	Therapeutic
	planning	through		management of	generic	procedures
		endoscope		symptoms and		
				disease		
STG 1988	Policy	Widespread use	N/A	Treatment and	Other -	Therapeutic
	planning	of microsurgery		management of	generic	procedures
				symptoms and		
				disease		
STG 1988	Policy	Electronic gas	N/A	Supporting the	XIX - injury	Medical equipment
	planning	valve regulator for		provision of care		
		safety in		and/or increasing		
		anaesthaesia		service efficiency		
STG 1988	Policy	Instantaneous	N/A	Supporting	XIX - injury	Diagnostic tests
	planning	measurement of		patients receiving	-	and imaging
		blood gases and		care (designed to		
		drug levels in the		be used by		
		body during		individuals)		
		anasthaesia				
STG 1988	Policy	Computerised	N/A	Supporting the	Other -	IT systems, eHealth
	planning	ECG operating		provision of care	generic	and mHealth
		room		and/or increasing		
				service efficiency		
STG 1988	Policy	Data on each	N/A	Supporting	Other -	IT systems, eHealth
	planning	patient available		patients receiving	generic	and mHealth
		at any moment		care (designed to		
		during the		be used by		
		operation		individuals)		
STG 1988	Policy	Computerised	N/A	Supporting	Other -	IT systems, eHealth
	planning	electroanaesthesi		patients receiving	generic	and mHealth
		a		care (designed to		
				be used by		
				individuals)		
STG 1988	Policy	New methods to	N/A	Treatment and	Other -	Devices and
	planning	close wounds e.g.		management of	generic	biomaterials
		tissue glue with		symptoms and		
		ultrasound		disease		
STG 1988	Policy	Spectroscopy	N/A	Diagnosis and	XI - GI tract,	Diagnostic tests
	planning	using optical		monitoring of	dental	and imaging
		methods to		disease	health	
		diagnose caries				
STG 1988	Policy	Bone like implants	N/A	Treatment and	XI - GI tract,	Devices and
	planning	for teeth and		management of	dental	biomaterials
		bones		symptoms and	health	
				disease		
STG 1988	Policy	Home monitoring	N/A	Supporting	Other -	IT systems, eHealth
	planning	especially of the		patients receiving	generic	and mHealth
		elderly		care (designed to		

				be used by individuals)		
STG 1988	Policy planning	Networks for communications between and within hospitals	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Huge mass memories (e.g. on laser disc) for the storage of medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Video disk oriented data base for medical records	N/A	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Computer aided examination and testing	N/A	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
STG 1988	Policy planning	Improved biomaterials for joint implants and plastic surgery	N/A	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
STG 1988	Policy planning	Improved materials for artificial blood vessels	N/A	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Cahill et al Technology Map 1999	policy planning	Therapeutics for arterial occlusion and myocardial infarction	4	Treatment and management of symptoms and disease	IX - circulation	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	Policy planning	Guidelines for adult disease preventing life style	8	Supporting the provision of care and/or increasing service efficiency	XXI - screening, rehab	Organisational programmes
Cahill et al Technology Map 1999	policy planning	Development of anti-cancer agents (gene level)	11	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	policy planning	drugs preventing the occurrence of cancer	12	Health promotion and prevention of disease	II - cancers	Drugs (not prophylactic vaccines)
Cahill et al Technology Map 1999	policy planning	Effective means to prevent metastasis	15	Health promotion and prevention of disease	II - cancers	Unknown
Cahill et al Technology Map 1999	policy planning	Genetic/biochemi cal tests for schizophrenia and depression	9	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging

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Food and Drug	Policy	Biosensors	10	Unknown	Other -	Diagnostic tests
Administration	planning				generic	and imaging
(FDA) surveys						
1998						
Food and Drug	Policy	Laser diagnosis	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning			monitoring of	generic	and imaging
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Tissue engineered	10	Treatment and	Other -	Devices and
Administration	planning	devices		management of	generic	biomaterials
(FDA) surveys				symptoms and	0	
1998				disease		
Food and Drug	Policy	Blood vessel	10	Treatment and	IX -	Regenerative
Administration	planning	prosthetics	10	management of	circulation	medicine
(FDA) surveys	planning	prostricties		symptoms and	Circulation	medicine
1998				disease		
	Policy	Pana prosthatics/	10		XIII -	Pogoporativo
Food and Drug Administration	•	Bone prosthetics/	10	Treatment and	musculoske	Regenerative medicine
	planning	growth		management of		medicine
(FDA) surveys				symptoms and	letal	
1998			10	disease		
Food and Drug	Policy	Cardiac	10	Treatment and	IX -	Unknown
Administration	planning	stimulation		management of	circulation	
(FDA) surveys				symptoms and		
1998				disease		
Food and Drug	Policy	cartilage	10	Treatment and	XIII -	Devices and
Administration	planning	prosthetics		management of	musculoske	biomaterials
(FDA) surveys				symptoms and	letal	
1998				disease		
Food and Drug	Policy	Computer aided	10	Diagnosis and	Other -	IT systems, eHealth
Administration	planning	clinical labs		monitoring of	generic	and mHealth
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Computer aided	10	Supporting the	Other -	IT systems, eHealth
Administration	planning	diagnosis		provision of care	generic	and mHealth
(FDA) surveys				and/or increasing	0	
1998				service efficiency		
Food and Drug	Policy	Telemedicine	10	Supporting	Other -	IT systems, eHealth
Administration	planning	. Sicilicatenic		patients receiving	generic	and mHealth
(FDA) surveys	Pidiming			care (designed to	generic	
1998				be used by		
1336				individuals)		
Food and Drug	Policy	Drug impregnated	10	Treatment and	Other -	Devices and
Administration	•	devices	10			biomaterials
	planning	uevices		management of	generic	טוטווומנפוומוט
(FDA) surveys				symptoms and		
1998	Dalia.	Fu danas:	10	disease	Other	Diamanticles
Food and Drug	Policy	Endoscopy	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning			monitoring of	generic	and imaging
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Hearing	10	Rehabilitation	VIII - ear	Devices and
Administration	planning	aids/Nonimplante				biomaterials

(FDA) surveys 1998		d sensory aids				
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart valves	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Heart pumps	10	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Home diagnostics /Home/self monitoring & diagnosis	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Organisational programmes
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image contrast agents	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Integrated patient medical info systems	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser treatment	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	kidney prosthetics	10	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Laser surgery	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Liver prosthetics	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive neurosurgery	10	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Mini invasive cardiac surgery	10	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	MRI	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Food and Drug Administration (FDA) surveys 1998	Policy planning	Neuromuscular stimulation	10	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Nerve regeneration	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Neural stimulation	10	Treatment and management of symptoms and disease	VI - nervous	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Ocular prosthetics	10	Treatment and management of symptoms and disease	VII - eye	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Pancreas prosthetics	10	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Patient smart cards	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Robotic surgery	10	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Skin prosthetics	10	Treatment and management of symptoms and disease	XII - skin	Regenerative medicine
Food and Drug Administration (FDA) surveys 1998	Policy planning	Telemedicine- home use	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 1998	Policy planning	Telemedicine- radiology	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Food and Drug Administration (FDA) surveys 2008	Policy planning	Robotic surgical systems	0	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Point-of-care products	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Food and Drug	Policy	Computer-	10	Diagnosis and	Other -	IT systems, eHealth
Administration	planning	assisted		monitoring of	generic	and mHealth
(FDA) surveys		diagnostic		disease		
1998		systems				
Food and Drug	Policy	Neuro-sensory	10	Diagnosis and	VI -	Devices and
Administration	planning	devices		monitoring of	nervous	biomaterials
(FDA) surveys				disease		
1998						
Food and Drug	Policy	Optical diagnostic	10	Diagnosis and	Other -	Diagnostic tests
Administration	planning	products		monitoring of	generic	and imaging
(FDA) surveys				disease		
1998	2 11		10		0.1	
Food and Drug	Policy	Integrated	10	Supporting the	Other -	IT systems, eHealth
Administration	planning	electronic patient		provision of care	generic	and mHealth
(FDA) surveys		medical records		and/or increasing		
1998	Dallan	Damata maticut	10	service efficiency	Othern	IT as at a second and the
Food and Drug	Policy	Remote patient	10	Supporting	Other -	IT systems, eHealth and mHealth
Administration	planning	monitoring		patients receiving	generic	and mhealth
(FDA) surveys 1998		systems		care (designed to be used by		
1996				individuals)		
Food and Drug	Policy	Glucose	10	Diagnosis and	IV -	Diagnostic tests
Administration	planning	monitoring	10	monitoring of	endocrine	and imaging
(FDA) surveys	piariring	products		disease	endocime	and imaging
1998		products	5	discuse		
Food and Drug	Policy	Tissue engineered	10	Treatment and	Other -	Regenerative
Administration	planning	products		management of	generic	medicine
(FDA) surveys				symptoms and	0	
1998				disease		
Food and Drug	Policy	Advanced	10	Rehabilitation	XIII -	Devices and
Administration	planning	prosthetic limbs			musculoske	biomaterials
(FDA) surveys					letal	
1998						
Food and Drug	Policy	Minimally invasive	10	Treatment and	Other -	Devices and
Administration	planning	implants (e.g.,		management of	generic	biomaterials
(FDA) surveys		percutaneous or		symptoms and		
1998		natural orifice		disease		
		delivery)				
Food and Drug	Policy	Virtual reality	10	Unknown	Other -	IT systems, eHealth
Administration	planning	systems for			generic	and mHealth
(FDA) surveys		immersive				
1998		training and other				
F 1 15	D 1:	applications	10		0:1	
Food and Drug	Policy	Optical	10	Treatment and	Other -	Devices and
Administration	planning	therapeutic		management of	generic	biomaterials
(FDA) surveys		devices		symptoms and		
1998	Delieu	Intounat leased	10	disease	Othor	IT avakovas allasiki
Food and Drug	Policy	Internet-based	10	Supporting	Other -	IT systems, eHealth
Administration	planning	medical device		patients receiving	generic	and mHealth
(FDA) surveys		systems		care (designed to		
1998				be used by		

				individuals)		
Food and Drug Administration (FDA) surveys 1998	Policy planning	New (non-eluting) drug delivery systems	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Food and Drug Administration (FDA) surveys 1998	Policy planning	Robotic prosthetics	20	Rehabilitation	Other - generic	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of insulin pumps and delivery systems	20	Treatment and management of symptoms and disease	IV - endocrine	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	New types of stents	20	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Joint replacements	20	Treatment and management of symptoms and disease	XIII - musculoske letal	Devices and biomaterials
Food and Drug Administration (FDA) surveys 1998	Policy planning	Image-guided therapy systems	20	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced ultrasound imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced optical imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Advanced MR imaging systems	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Minimally invasive radiotherapy systems	20	Treatment and management of symptoms and disease	II - cancers	Non-surgical therapy
Food and Drug Administration (FDA) surveys 1998	Policy planning	Genetic diagnostic products	20	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Food and Drug Administration (FDA) surveys 1998	Policy planning	Remote patient monitoring systems	20	Supporting patients receiving care (designed to be used by	Other - generic	IT systems, eHealth and mHealth

				individuals)		
Institute of the Future, 2009	Research	Bio-marker based tools will screen for future disease risk and produce new diagnoses based on probabilities	11	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	Visualizations improve diet & exercise	11	Health promotion and prevention of disease	Other - generic	Non-surgical therapy
Institute of the Future, 2009	Research	GPS-enabled asthma inhalers	11	Supporting the provision of care and/or increasing service efficiency	X - respiratory	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Workplace clinics	11	Health promotion and prevention of disease	Other - generic	Organisational programmes
Institute of the Future, 2009	Research	Urban planning for walkability, pollution reduction, neighbourood food systems	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Report cards include Body Mass Index (BMI) scores	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	iPhone-synched medical devices	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Quantifying, visualizing, and mapping health implications of environments	11	Health promotion and prevention of disease	Other - generic	Population programmes
Institute of the Future, 2009	Research	Deep brain stimulation used for neurological, behavioral issues	11	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials
Institute of the Future, 2009	Research	Home sensors for elder care	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
Institute of the Future, 2009	Research	Individually targeted therapies	11	Treatment and management of symptoms and	Other - generic	Drugs (not prophylactic vaccines)

				disease		
Institute of the Future, 2009	Research	Sensors track drug efficacy	11	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Institute of the Future, 2009	Research	Genotypic diagnostics and	11	Diagnosis and monitoring of	Other - generic	Diagnostic tests and imaging
Institute of the Future, 2009	Research	risk New technologies enable individuals to experience the future effects of present-day behavior choices	11	Treatment and management of symptoms and disease	Other - generic	Unknown
Institute of the Future, 2009	Research	Regenerative medicine (general)will replace, restore, maintain, or enhance tissue and organ functions	11	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Institute of the Future, 2009	Research	New ways of reliably measuring subjective states such as happiness, anxiety, or pain, and finding the neural correlates of personality and behavioral patterns	11	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
Institute of the Future, 2009	Research	prototype of a prosthetic arm that can be controlled naturally and provide sensory feedback.	11	Rehabilitation	XIII - musculoske letal	Devices and biomaterials
Stevens et al 1997	Research	Magnetic resonance imaging	1	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Minimally invasive surgery	1	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Stevens et al 1997	Research	drugs for Therapeutic refractory	1	Treatment and management of symptoms and	V - mental health	Drugs (not prophylactic vaccines)

		schizphrenia		disease		
Stevens et al 1997	Research	Implantable vascular stents	1	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Stevens et al 1997	Research	Peripheral blood stem cells transplantation	1	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Laser Therapeutic of benign prostatic hyperplasia	1	Treatment and management of symptoms and disease	XIV - genitourina ry	Non-surgical therapy
Stevens et al 1997	Research	Gene therapy advances	4	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Polymerase chain reaction	4	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Telemedicine	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Interventional radiology	1	Treatment and management of symptoms and disease	Other - generic	Non-surgical therapy
Stevens et al 1997	Research	Angioplasty	1	Treatment and management of symptoms and disease	IX - circulation	Therapeutic procedures
Stevens et al 1997	Research	Interferon for chronic granulocytic leukemia	1	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Interferon for hepatitis C	1	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Lasers for dermatology	1	Treatment and management of symptoms and disease	XII - skin	Devices and biomaterials
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

Stevens et al	Research	Near patient	2	Diagnosis and	Other -	Diagnostic tests
1997	Research	1	2	monitoring of		and imaging
1997		testing		disease	generic	and imaging
Chavena at al	Dagagrah	Davisian of injut	1		VIII	Thousantia
Stevens et al	Research	Revision of joint	1	Treatment and	XIII -	Therapeutic
1997		replacement		management of	musculoske	procedures
				symptoms and	letal	
			_	disease		
Stevens et al	Research	Genetic screening	4	Diagnosis and	Other -	Diagnostic tests
1997				monitoring of	generic	and imaging
				disease		
Stevens et al	Research	Helicobactor	1	Treatment and	1 -	Drugs (not
1997		pylori eradication		management of	infections	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Positron emission	4	Diagnosis and	Other -	Diagnostic tests
1997		tomography		monitoring of	generic	and imaging
				disease		
Stevens et al	Research	Phacoemulsificati	1	Treatment and	VII - eye	Therapeutic
1997		on		management of	,	procedures
				symptoms and		
				disease		
Stevens et al	Research	Cochlear implants	1	Rehabilitation	VIII - ear	Devices and
1997						biomaterials
Stevens et al	Research	Paclitaxels for	2	Treatment and	II - cancers	Drugs (not
1997	1100001011	ovarian & breast		management of		prophylactic
1337		cancer		symptoms and		vaccines)
		Caricei		disease		Vaccines
Stevens et al	Research	Bone	1	Diagnosis and	XIII -	Diagnostic tests
1997	Nesearch	densitometry	1	monitoring of	musculoske	and imaging
1997		· ·		disease		and imaging
Charles at al	Danasarah	screening	1		letal	Davis de st
Stevens et al	Research	Anticoagulants for	1	Health promotion	IX -	Drugs (not
1997		atrial fibrillation		and prevention of	circulation	prophylactic
<u> </u>		51	_	disease	0.1	vaccines)
Stevens et al	Research	Picture archiving	4	Supporting the	Other -	IT systems, eHealth
1997		and		provision of care	generic	and mHealth
		communication		and/or increasing		
		system		service efficiency		
Stevens et al	Research	rhDNase	2	Treatment and	IV -	Drugs (not
1997				management of	endocrine	prophylactic
				symptoms and		vaccines)
				disease		
Stevens et al	Research	Biomaterials in	2	Treatment and	XIII -	Devices and
1997		bone and joint		management of	musculoske	biomaterials
		replacement		symptoms and	letal	
			<u> </u>	disease		
		i		Treatment and	II - cancers	Drugs (not
Stevens et al	Research	Increased use of	2	i i catilicitt alla	ii cancers	D1483 (110t
Stevens et al 1997	Research	Increased use of adjuvant	2	management of	ii cancers	prophylactic
	Research		2		ii cancers	
	Research	adjuvant	2	management of	ii cancers	prophylactic
	Research Research	adjuvant chemotherapy in	2	management of symptoms and	III - blood	prophylactic

		VIII and recombinant factor VIII in hemophilia		symptoms and disease		vaccines)
Stevens et al 1997	Research	Mirena intrauterine contraceptive device	2	Health promotion and prevention of disease	XIV - genitourina ry	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Adjuvant chemotherapy in lung cancer	4	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	drugs for Alzheimer's disease	6	Treatment and management of symptoms and disease	V - mental health	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Xenotransplantati on	6	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Stevens et al 1997	Research	Screening for abdominal aortic aneurysm	6	Health promotion and prevention of disease	IX - circulation	Population programmes
Stevens et al 1997	Research	Remotely controlled robots (laboratory)	6	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Stevens et al 1997	Research	Gene therapy for cystic fibrosis	6	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine
Stevens et al 1997	Research	New anesthetic vapors	2	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Magnetic resonance angiography	4	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging
Stevens et al 1997	Research	Digital radiography	4	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Stevens et al 1997	Research	Alendronate for osteoporosis	2	Treatment and management of symptoms and disease	XIII - musculoske letal	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Continuous positive airways pressure	1	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy

Stevens et al 1997	Research	Expanding metal stents for esophageal cancer	1	Treatment and management of symptoms and disease	II - cancers	Devices and biomaterials
Stevens et al 1997	Research	Community placements for severe mental illness	1	Supporting patients receiving care (designed to be used by individuals)	V - mental health	Organisational programmes
Stevens et al 1997	Research	Fludarabine in lymphomas and chronic leukemias	2	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Combined therapy for HIV/AIDS	2	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Epilepsy surgery	1	Treatment and management of symptoms and disease	VI - nervous	Therapeutic procedures
Stevens et al 1997	Research	Lipid-lowering drugs for elevated cholesterol	1	Health promotion and prevention of disease	IX - circulation	Drugs (not prophylactic vaccines)
Stevens et al 1997	Research	Repair of abdominal aortic aneurysm with transfemoral endovasculate (bifurcated) graft	4	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Stevens et al 1997	Research	Intracytoplasmatic sperm injection	2	Treatment and management of symptoms and disease	XIV - genitourina ry	Therapeutic procedures
Stevens et al 1997	Research	Computed tomography (CT) scan advances	2	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Stevens et al 1997	Research	Voice activated dictation technology	1	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Stevens et al 1997	Research	Intra-arterial metallic stents	1	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Hand-held robotic and remote ultrasound	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	MRI guided catheterization	14	Diagnosis and monitoring of disease	IX - circulation	Diagnostic tests and imaging

Policy P	Tremblay and Yiu,	Policy	Image-guided	14	Treatment and	Other -	Therapeutic
Surgery and robotics Symptoms and disease Symptoms and disease Diagnosis and monitoring of disease Name	•			14			
rremblay and Yiu, 2006 rremblay and Yiu, 2007 rremblay and Yiu, 2008 rremblay and Yiu, 2009 rrembl	2000	piariring	• •		_	generic	procedures
Tremblay and Yiu, 2006 Policy planning Tromography Computed Tromography Policy planning Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning Tremblay and			• .				
Policy planning Policy pla	Tremblay and Yiu	Policy		14		XI - GI tract	Diagnostic tests
Colonography Digital Dignostic and Dignostic tests Dignostic and Dignostic tests Dignostic and		,	· ·	- '	_	· ·	_
Tremblay and Yiu, 2006 Policy planning Policy		, p.s	<u> </u>		_		
Tremblay and Yiu, 2006 Policy planning Poli	Tremblay and Yiu.	Policy	<u> </u>	14			Diagnostic tests
Tremblay and Yiu, 2006 Trembl			_		_		_
Tremblay and Yiu, 2006 Trembl		J	,		_	8-11-11-11	
Planning Imaging Monitoring of disease Supporting the provision of care and/or increasing processing Supporting the provision of care and/or increasing service efficiency	Tremblay and Yiu,	Policy	Molecular-level	14	Diagnosis and	Other -	Diagnostic tests
Tremblay and Yiu, 2006 Policy planning Pol	•	planning	imaging		monitoring of	generic	and imaging
2006 planning scanners with improved image processing service efficiency Tremblay and Yiu, 2006 planning Policy planning Tremblay and Yiu, 2006 Planning Policy planning Tremblay and Yiu, 2006 Planning Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Planning Policy Po					disease		
Tremblay and Yiu, 2006 Trembl	Tremblay and Yiu,	Policy	More economical	14	Supporting the	Other -	Medical equipment
Tremblay and Yiu, 2006 Trembl	2006	planning	scanners with		provision of care	generic	
Tremblay and Yiu, 2006 Trembl			improved image		and/or increasing		
Policy planning Policy pla			processing		service efficiency		
Tremblay and Yiu, 2006 Trembl	-	· ·	4D imaging	14		Other -	_
Tremblay and Yiu, 2006 Trembl	2006	planning			monitoring of	generic	and imaging
2006 planning to capture an image and general reduction in scan times Tremblay and Yiu, 2006 Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy planning or coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy							
image and general reduction in scan times Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Tremblay an	•			14		Other -	Medical equipment
Tremblay and Yiu, 2006 Trembl	2006	planning			· •	generic	
Tremblay and Yiu, 2006 Policy planning procedures Tremblay and Yiu, 2006 Policy planning planning procedures Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning planni					_		
Tremblay and Yiu, 2006					service efficiency		
2006 planning increasingly replacing invasive procedures Tremblay and Yiu, 2006 Policy planning of detection of coronary heart diseases Tremblay and Yiu, 2006 Policy planning Planning Planning Planning Po							
Tremblay and Yiu, 2006 Trembl	•		•	14	_		_
Tremblay and Yiu, 2006 Trembl	2006	pianning	J ,		_	generic	and imaging
Tremblay and Yiu, 2006 Trembl					disease		
2006 planning surgery for early detection of coronary heart diseases Tremblay and Yiu, 2006 Policy planning Policy Po	Trambley and Viv	Doling	• •	1.4	Diagnosis and	IV	Diagnostic tosts
detection of coronary heart diseases Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy Policy Policy Planning Policy Policy Policy Planning Policy Pol	-	7		14	-		_
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy planning Plan	2000	piaiiiiig				Circulation	and imaging
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Policy planning Policy planning Policy planning Policy planning Tremblay and Yiu, 2006 Policy planning Policy Policy Planning Policy Planning Policy Planning Policy Planning Planning Policy Planning Planning Planning Policy Planning Planning Planning Planning Planning Planning Planning Pl					uisease		
Tremblay and Yiu, 2006 Policy planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning Health monitoring of disease Tremblay and Yiu, 2006			•				
2006 planning Resonance Guided Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Policy planning Policy platform Policy platform Policy Poli	Tremblay and Yiu	Policy		14	Diagnosis and	Other -	Diagnostic tests
Focused Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 3000 Tremblay and Yiu, 4000 Trembl	•						_
Ultrasound for Imaging of inflammation Tremblay and Yiu, 2006 Tremblay and Yiu, 2016 Tremblay and Y						5	
Imaging of inflammation Tremblay and Yiu, 2006 Tremb							
Tremblay and Yiu, 2006 Tremblay and Yiu, 2006 Policy planning health monitoring health monitoring patients receiving care (designed to be used by individuals) Tremblay and Yiu, 2006 Policy planning diagnostic platform Tremblay and Yiu, Policy Hand-held gamma 14 Supporting patients receiving care (designed to be used by individuals) Supporting patients receiving patients receiving care (designed to be used by individuals) Total Care (designed to be used by individuals) Total Care (designed to be used by individuals) Tremblay and Yiu, Policy Fehealth Supporting the provision of care and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests			Imaging of				
2006 planning health monitoring patients receiving care (designed to be used by individuals) Tremblay and Yiu, 2006 planning planning diagnostic platform platform platform platform service efficiency Policy planning diagnostic platform service efficiency planning service and other - Diagnostic tests Diagnostic tests							
Care (designed to be used by individuals) Tremblay and Yiu, Policy Planning diagnostic platform Policy Planding Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	Tremblay and Yiu,	Policy	Wireless home-	14	Supporting	Other -	IT systems, eHealth
be used by individuals) Tremblay and Yiu, Policy planning diagnostic platform Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	2006	planning	health monitoring		patients receiving	generic	and mHealth
Tremblay and Yiu, Policy E-health diagnostic platform platform service efficiency Tremblay and Yiu, Policy Planning Diagnostic platform service efficiency Planning Service efficiency Planning Service efficiency Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests					care (designed to		
Tremblay and Yiu, 2006 Policy planning diagnostic platform Tremblay and Yiu, Policy Policy planning diagnostic platform Policy planning diagnostic platform Diagnosis and Piu, Policy Policy E-health diagnostic provision of care and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests					be used by		
2006 planning diagnostic platform provision of care and mHealth and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests					· · · · · · · · · · · · · · · · · · ·		
platform and/or increasing service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	•			14			
Service efficiency Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests	2006	planning	_		l '	generic	and mHealth
Tremblay and Yiu, Policy Hand-held gamma 14 Diagnosis and Other - Diagnostic tests			platform		_		
					•		
THE INCOME I ADDRESS I DESCRIPTION I DESCRIPTION I TOUR TOUR TOUR TOUR TOUR TOUR TOUR TOUR	•		_	14	_		_
2006 pianning camera monitoring of generic and imaging	2006	planning	camera		monitoring of	generic	and imaging

				disease		
Tremblay and Yiu, 2006	Policy planning	"one-stop" diagnosis and Therapeutic	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	customised hybrid systems for specific clinical situations	14	Unknown	Other - generic	Organisational programmes
Tremblay and Yiu, 2006	Policy planning	Near Infra-red Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Spatially-resolved Spectroscopy	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Optical Coherence Tomography	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Capsule Endoscopy	14	Diagnosis and monitoring of disease	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Tele-echography	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Tele-colposcopy	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Tremblay and Yiu, 2006	Policy planning	Electronic Nose	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	New contrast agents for Rubidium	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised gases	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Terahertz waves	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Microwaves, light spectrum	14	Unknown	Other - generic	Devices and biomaterials
Tremblay and Yiu, 2006	Policy planning	Hyperpolarised imaging	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Tremblay and Yiu, 2006	Policy planning	Specific advances in MRI, Ultrasound, Radiographyetc	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

Tremblay and Yiu,	Policy	Reduction in use	14	Supporting the	Other -	Organisational
2006	planning	of invasive		provision of care	generic	programmes
		diagnostic		and/or increasing		
		procedures		service efficiency		
Tremblay and Yiu,	Policy	Diagnosis of	14	Diagnosis and	XIV -	Unknown
2006	planning	kidney disorders		monitoring of	genitourina	
		without renal		disease	ry	
		biopsy				
Tremblay and Yiu,	Policy	Ex vivo molecular-	14	Diagnosis and	Other -	IT systems, eHealth
2006	planning	computer		monitoring of	generic	and mHealth
		diagnosis		disease		
Tremblay and Yiu,	Policy	Smart-drug	14	Treatment and	Other -	Devices and
2006	planning	delivery systems		management of	generic	biomaterials
		, ,		symptoms and		
				disease		
Tremblay and Yiu,	Policy	Polymer-	9	Diagnosis and	Other -	Diagnostic tests
2006	planning	encapsulated,		monitoring of	generic	and imaging
	1-119	bioconjugated		disease	30	
		quantum dots		discuse		
Tremblay and Yiu,	Policy	Patient accessed	4	Supporting the	Other -	Organisational
2006	planning	universal health		provision of care	generic	programmes
2000	Pidililing	records		and/or increasing	generic	programmes
		records		service efficiency		
Tremblay and Yiu,	Policy	In silico-in vivo	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	integration (lab	14	monitoring of	generic	and imaging
2000	planning	on-a-chip)		disease	generic	and imaging
Tremblay and Yiu,	Policy	Wide deployment	9	Supporting the	Other -	Devices and
2006	planning	of non-invasive		provision of care		biomaterials
2000	piariring	technologies and		and/or increasing	generic	Diomaterials
		biosensors		service efficiency		
Tromblay and Viv	Policy		6	Supporting	Other -	Organicational
Tremblay and Yiu,	,	Direct consumer	0			Organisational
2006	planning	access to		patients receiving	generic	programmes
		diagnostic tests		care (designed to		
				be used by		
T 11 120	D 1:			individuals)	0.1	5
Tremblay and Yiu,	Policy	Molecular imaging	9	Diagnosis and	Other -	Diagnostic tests
2006	planning	with single		monitoring of	generic	and imaging
		molecular		disease		
— 1.1	5 !:	pecision	_		0.11	<u> </u>
Tremblay and Yiu,	Policy	diagnostic testing	7	Supporting the	Other -	Diagnostic tests
2006	planning	throughout the		provision of care	generic	and imaging
		care pathway		and/or increasing		
	2 11			service efficiency		
Tremblay and Yiu,	Policy	Neuro-imaging at	14	Diagnosis and	VI -	Diagnostic tests
2006	planning	cellular level of		monitoring of	nervous	and imaging
		brain processes		disease		
		(thoughts)				
Tremblay and Yiu,	Policy	Molecular-	14	Other	Other -	Drugs (not
2006	planning	computers used			generic	prophylactic
		to design smart				vaccines)
		therapies				

Tremblay and Yiu,	Policy	Remote internet	9	Supporting	Other -	IT systems, eHealth
2006	planning	diagnosis based		patients receiving	generic	and mHealth
		on data received		care (designed to		
		from patient's		be used by		
		home		individuals)		
Tremblay and Yiu,	Policy	Molecular	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	diagnosis		monitoring of	generic	and imaging
				disease		
Tremblay and Yiu,	Policy	diagnostic -guided	14	Treatment and	Other -	Drugs (not
2006	planning	therapy for		management of	generic	prophylactic
		individualised		symptoms and		vaccines)
		medicine		disease		
Tremblay and Yiu,	Policy	Computer-	14	Diagnosis and	Other -	IT systems, eHealth
2006	planning	assisted diagnosis		monitoring of	generic	and mHealth
		with pattern		disease		
		recognition				
Tremblay and Yiu,	Policy	Self-propelled	9	Unknown	Other -	Devices and
2006	planning	micro-machines			generic	biomaterials
		for diagnosis and				
		Therapeutic				
Tremblay and Yiu,	Policy	diagnostic bio-	9	Diagnosis and	II - cancers	Diagnostic tests
2006	planning	chip for cancer		monitoring of		and imaging
				disease		
Tremblay and Yiu,	Policy	Investigation of	14	Diagnosis and	IX -	Devices and
2006	planning	thrombosis and		monitoring of	circulation	biomaterials
		vascular		disease		
		pathology using				
		3D tomography				
		with remote				
		controlled micro-				
- 11 12	D 1:	instruments	40		0.1	
Tremblay and Yiu,	Policy	Personal care	12	Supporting	Other -	Medical equipment
2006	planning	nurse-robots		patients receiving	generic	
				care (designed to		
				be used by		
T 1.1.	D. P.	E	4.4	individuals)	0.11	D'a a a a a l'a la a la
Tremblay and Yiu,	Policy	Functional	14	Diagnosis and	Other -	Diagnostic tests
2006	planning	combination of		monitoring of	generic	and imaging
		targeting and		disease		
Tromblevered Viv	Polic:	imaging	1.4	Cupporting the	Othor	Organisational
Tremblay and Yiu,	Policy	Intelligent and	14	Supporting the	Other -	Organisational
2006	planning	context sensitive		provision of care	generic	programmes
		clinical systems		and/or increasing service efficiency		
Tremblay and Yiu,	Policy	Personal access to	14	Supporting	Other -	Unknown
2006	planning	genomic	14	patients receiving	generic	GIINIIOWII
2000	Pigining	information		care (designed to	generic	
		inionnation		be used by		
				individuals)		
Tremblay and Yiu,	Policy	Development of	9	Treatment and	Other -	Regenerative
2006	planning	effective gene		management of	generic	medicine
2000	Piailillig	Checuve gene		management of	generic	medicine

		therapies		symptoms and disease		
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of scientific guidelines for adult-disease-preventing lifestyles (nutrition, rest and exercise)	9	Health promotion and prevention of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of chemotherapy that brings complete remission to digestive organ cancer with low drug-responsiveness	18	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of techniques to overcome the drug resistance of malignant tumours	16	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of drugs that cure viral liver disease	13	Treatment and management of symptoms and disease	XI - GI tract, dental health	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of biological and immunological therapy effective for cancer	14	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective methods of preventing Alzheimer's disease	16	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Possible to cure allergic diseases	21	Treatment and management of symptoms and disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an HIV vaccine	10	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of gene therapy against malignant tumors	17	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of prevention methods for the contraction of diabetic complications	11	Health promotion and prevention of disease	IV - endocrine	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of anti-AIDS therapy	12	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of an early cancer diagnosis technique based on biochemical examination	10	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to eliminate viruses from blood	12	Treatment and management of symptoms and disease	I - infections	Therapeutic procedures
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of prevention methods for stress-induced mental disorders	14	Health promotion and prevention of disease	V - mental health	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a method to quantitatively assess the level of aging (biological age) in relation to chronological age.	9	Diagnosis and monitoring of disease	Other - generic	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a preventive measure against diabetic complications.	14	Health promotion and prevention of disease	IV - endocrine	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of presbyopia prevention methods	29	Health promotion and prevention of disease	VII - eye	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a laser-applied tooth decay treatment method	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread method of prevention against a premature delivery through	8	Health promotion and prevention of disease	XV - pregnancy	Organisational programmes

	1	T		T		T
		the progression of				
		management				
		system of fetal				
		information.				
Science &	Policy	Practical use of	19	Health promotion	XV -	Unknown
Technology	planning	the prevention		and prevention of	pregnancy	
Foresight survey		against congenital		disease	,	
Japan 1997		anomaly				
		originating in the				
		embryonic or fetal				
		period.				
Science &	Policy	Widespread use	19	Health promotion	VI -	Unknown
Technology	planning	of preventive	13	and prevention of	nervous	OTIKITOWIT
Foresight survey	planning	measure for		disease	ner vous	
- '				uisease		
Japan 1997	D. II.	cerebral palsy	_	D'accession and		D'acception and
Science &	Policy	Widespread use	7	Diagnosis and	II - cancers	Diagnostic tests
Technology	planning	of a cancer spread		monitoring of		and imaging
Foresight survey		diagnosis		disease		
Japan 1997		technique based				
		on 3-D imaging.				
Science &	Policy	Widespread use	11	Diagnosis and	II - cancers	Unknown
Technology	planning	of a cancer risk		monitoring of		
Foresight survey		assessment		disease		
Japan 1997		technique based				
		on genetic				
		analysis.				
Science &	Policy	Widespread use	9	Unknown	II - cancers	Unknown
Technology	planning	of against of				
Foresight survey		cancer cells drug				
Japan 1997		sensitivity				
·		measurement				
		method.				
Science &	Policy	Widespread use	9	Diagnosis and	II - cancers	Diagnostic tests
Technology	planning	of automatic		monitoring of		and imaging
Foresight survey	, p	testing equipment		disease		
Japan 1997		for cancer		discuse		
3apan 1337		cytodiagnosis.				
Science &	Policy	Practical use of	24	Diagnosis and	V - mental	Diagnostic tests
Technology	planning	classification and	24	monitoring of	health	and imaging
Foresight survey	piaiiiiiig	stage		disease	Health	and imaging
,		determination of		uisease		
Japan 1997						
		schizophrenia				
		based on				
		diagnostic				
		imaging.				
Science &	Policy	Practical use of	9	Diagnosis and	IX -	Diagnostic tests
Technology	planning	diagnosing		monitoring of	circulation	and imaging
Foresight survey		methods for		disease		
Japan 1997		determining the				
		level and spread				
		of arteriosclerosis				

		focused by a non- invasive process				
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of a correct diagnostic measure for kidney diseases without renal biopsy.	19	Diagnosis and monitoring of disease	XIV - genitourina ry	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of a capsule-type total gastro-intestinal tract monitoring system.	6	Diagnosis and monitoring of disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of specialist-level medical diagnosis assistance systems.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of non-invasive cell-level diagnostic imaging.	8	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a non-invasive technique to obtain blood biochemical examination data using body surface sensors.	9	Diagnosis and monitoring of disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation.	6	Diagnosis and monitoring of disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of malaria vaccines.	10	Health promotion and prevention of disease	infections	Prophylactic vaccines
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an effective insulin that can be administered orally.	16	Treatment and management of symptoms and disease	IV - endocrine	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of gene therapy for diabetes.	16	Treatment and management of symptoms and disease	IV - endocrine	Regenerative medicine

Science &	Policy	Widespread use	14	Treatment and	IX -	Regenerative
Technology	planning	of gene therapy		management of	circulation	medicine
Foresight survey		for familial		symptoms and		
Japan 1997		hypercholesterole		disease		
		mia.				
Science &	Policy	Development of	8	Treatment and	II - cancers	Therapeutic
Technology	planning	radiosensitizers		management of		procedures
Foresight survey		effective in cancer		symptoms and		
Japan 1997		treatment.		disease		
Science &	Policy	Widespread use	14	Treatment and	II - cancers	Non-surgical
Technology	planning	of heavy particle		management of		therapy
Foresight survey		against cancer		symptoms and		
Japan 1997				disease		
Science &	Policy	Development of a	19	Treatment and	Other -	Drugs (not
Technology	planning	technique to		management of	generic	prophylactic
Foresight survey		cause drug		symptoms and		vaccines)
Japan 1997		delivery to		disease		
		targeted sites in				
		the brain.				
Science &	Policy	Practical use of a	12	Treatment and	Other -	Unknown
Technology	planning	safe pain control		management of	generic	
Foresight survey		method without		symptoms and		
Japan 1997		side effects		disease		
Science &	Policy	Widespread use	24	Treatment and	VI -	Regenerative
Technology	planning	of gene therapy		management of	nervous	medicine
Foresight survey		for muscular		symptoms and		
Japan 1997		dystrophy.		disease		
Science &	Policy	Development of	31	Treatment and	VI -	Unknown
Technology	planning	effective		management of	nervous	
Foresight survey		treatment for		symptoms and		
Japan 1997		amyotrophic		disease		
		lateral sclerosis.				
Science &	Policy	Practical use of	21	Rehabilitation	XXI -	Devices and
Technology	planning	artificial muscles			screening,	biomaterials
Foresight survey		for limbs.			rehab	
Japan 1997	5 !!		20			
Science &	Policy	Practical use of a	20	Treatment and	IX -	Regenerative
Technology	planning	technique to		management of	circulation	medicine
Foresight survey		induce the		symptoms and		
Japan 1997		differentiation of		disease		
		fibroblasts into				
		cardiac muscle				
		and its application				
		to the treatment				
		of myocardial				
Colones 0	Dolier	infarction.	11	Trootmontond	IV/	Dogonorotica
Science &	Policy	Development of	11	Treatment and	IV -	Regenerative
Technology	planning	hybrid-type		management of	endocrine	medicine
Foresight survey		artificial		symptoms and		
Japan 1997		endocrine organs		disease		
		in which living				

		cells and artificial				
		objects coexist.				
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of functional blood purifiers that selectively remove specified components from blood	19	Treatment and management of symptoms and disease	III - blood	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of artificial hemoglobin as a red blood cell substitute.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of fully implanted artificial heart	14	Treatment and management of symptoms and disease	IX - circulation	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial lungs.	29	Treatment and management of symptoms and disease	X - respiratory	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial kidneys	26	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of fully implanted artificial pancreas	12	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of prevention and treatment methods for tooth decay and periodontitis to ensure the retention of 20 or more teeth at 80 year of age	14	Health promotion and prevention of disease	XI - GI tract, dental health	Population programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of a technique to store, cultivate and transplant one's own tissues.	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of implanted bladder control devices	12	Treatment and management of symptoms and disease	XIV - genitourina ry	Devices and biomaterials

Science &	Policy	Practical use of	19	Treatment and	Other -	Regenerative
Technology	planning	gene therapy for		management of	generic	medicine
Foresight survey		genetic disorders		symptoms and		
Japan 1997				disease		
Science &	Policy	Availability of	24	Treatment and	Other -	Regenerative
Technology	planning	genetherapy		management of	generic	medicine
Foresight survey		based on oral		symptoms and		
Japan 1997		delivery		disease		
Science &	Policy	Practical use of	21	Treatment and	Other -	Therapeutic
Technology	planning	heterogeneous		management of	generic	procedures
Foresight survey		organ		symptoms and		
Japan 1997		transplantation as		disease		
		means of				
		treatment.				
Science &	Policy	Widespread use	12	Supporting the	Other -	Organisational
Technology	planning	of a worldwide		provision of care	generic	programmes
Foresight survey		organ supply		and/or increasing		
Japan 1997		system		service efficiency		
Science &	Policy	Development of a	6	Treatment and	Other -	Non-surgical
Technology	planning	partial tissue		management of	generic	therapy
Foresight survey		destruction		symptoms and		
Japan 1997		method non-		disease		
		invasive to the				
		living body.				
Science &	Policy	Practical use of	14	Rehabilitation	VIII - ear	Devices and
Technology	planning	implanted				biomaterials
Foresight survey		artificial cochleas				
Japan 1997		effective for both				
		conductive				
		hearing loss and				
		perceptive				
		hearing loss.				
Science &	Policy	Development of a	21	Supporting	V - mental	Devices and
Technology	planning	device to sense		patients receiving	health	biomaterials
Foresight survey		the needs of		care (designed to		
Japan 1997		demented aged		be used by		
		people.		individuals)		
Science &	Policy	Development of	14	Rehabilitation	XXI -	Devices and
Technology	planning	controlling			screening,	biomaterials
Foresight survey		devices which			rehab	
Japan 1997		help the				
		cooperative				
		muscular actions				
		enabling object-				
		oriented				
6.1	D. II	movement.	11	D. L. Litter	V0/1	D. t.
Science &	Policy	Widespread use	11	Rehabilitation	XXI -	Devices and
Technology	planning	of artificial legs			screening,	biomaterials
Foresight survey		featuring a small			rehab	
Japan 1997		power source and				
		computer control.				

Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a blood cell production and supply technique based on industrial-scale cultivation.	15	Treatment and management of symptoms and disease	III - blood	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of systems for monitoring health condition and providing information for an appropriate diagnosis at home in event of accident or diseases.	11	Supporting patients receiving care (designed to be used by individuals)	XIX - injury	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of portable conversational speech interpretation systems.	24	Unknown	Other - generic	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of robots that care for people with severe physical and mental disabilities.	12	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Advancements in patient and hospital information management, leading to a reduction in waiting time at Japanese hospitals to 15 minutes or less.	7	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use in Japan of an ID card system that thoroughly covers an individual's health conditions and medical data.	9	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes
Science & Technology Foresight survey	Policy planning	Elucidation of the biological clock, leading to drug	9	Supporting patients receiving care (designed to	Other - generic	Unknown

Japan 1997		administration that takes it into consideration		be used by individuals)		
Science & Technology Foresight survey Japan 1997	Policy planning	Practical application of the production of artificial cells with organ characteristics.	29	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of anti-AIDS therapy	12	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of a rapid diagnostic method for rejection in organ and tissue transplantation	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Development of anti-cancer agents which target the manifestation functions of cancer genes	10	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Utilization of information about the gene structure of each individual patient in diagnosis and treatment	16	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology to regenerate organs or individuals from separated animal cells	20	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of methods for directly determining DNA sequences by physical means such as X-rays.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Science & Technology Foresight survey Japan 1997	Policy planning	Control of signal transduction in the carcinogenesis of cells, and widespread use of treatment	20	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)

		methods for dysdifferentiating carcinogenic cells.				
Science & Technology Foresight survey Japan 1997	Policy planning	Complete understanding of the factors contributing to stem cell multiplication, and widespread use of the practice of multiplying stem cells, as necessary, in test tubes and using them for treatment purpose	15	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of technology capable of synthesizing living cells by using only artificially produced chemical compounds.	31	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of elementary particle beam technology in genetic engineering.	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of drugs capable of preventing the occurrence of certain types of cancer.	11	Health promotion and prevention of disease	II - cancers	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of effective means to prevent metastasis of cancer.	14	Treatment and management of symptoms and disease	II - cancers	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of technologies for long-term (semi-permanent) culturing and preservation of	19	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine

		organs.				
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of artificial organs (pancreases, kidneys, livers, etc.) incorporating human cells and tissues	14	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an entirely implantable artificial kidney.	18	Treatment and management of symptoms and disease	XIV - genitourina ry	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Development of an artificial cornea, allowing the visually impaired to regain their sight.	25	Treatment and management of symptoms and disease	VII - eye	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of artificial muscle elements.	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Science & Technology Foresight survey Japan 1997	Policy planning	Establishment of interface technology between neural information and artificial organism structures.	25	Treatment and management of symptoms and disease	VI - nervous	Medical equipment
Science & Technology Foresight survey Japan 1997	Policy planning	Development of neural-computers with new logic structures modeled on brain functions.	24	Unknown	VI - nervous	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Development of interfaces enabling direct linkage between the computer and the brain.	21	Treatment and management of symptoms and disease	XXI - screening, rehab	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of electric circuits with similar self-organization and self-restoration functions as neural networks.	14	Treatment and management of symptoms and disease	VI - nervous	Devices and biomaterials

Science & Technology Foresight survey Japan 1997 Science & Technology	Policy planning Policy planning	Development of diagnostic and medical treatment micromachines capable of traveling on their own inside organisms (body cavity organs). Widespread use of remote surgery	14	Diagnosis and monitoring of disease Supporting the provision of care	Other - generic Other - generic	Devices and biomaterials IT systems, eHealth and mHealth
Foresight survey Japan 1997		systems utilizing virtual reality technology.		and/or increasing service efficiency		
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of vicarious experience devices (using virtual reality technology) which allow bed-ridden patients to take vacations, etc.	9	Rehabilitation	XXI - screening, rehab	IT systems, eHealth and mHealth
Science & Technology Foresight survey Japan 1997	Policy planning	Widespread use of methods for controlling the immune system locally	14	Treatment and management of symptoms and disease	III - blood	Unknown
Science & Technology Foresight survey Japan 1997	Policy planning	Development of effective Therapeutic for amyotrophic lateral sclerosis	21	Treatment and management of symptoms and disease	VI - nervous	Drugs (not prophylactic vaccines)
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of batteries of artificial organs implanted in the living body	17	Treatment and management of symptoms and disease	Other - generic	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Development of artificial liver (external devices supporting liver functions) usable on a long-term, continuous basis	19	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials
Science & Technology Foresight survey Japan 1997	Policy planning	Practical use of heterogeneous organ transplantation as means of Therapeutic	19	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures

Science &	Dolicu	Dovolonment of	24	Rehabilitation	\/II 01/0	Davisos and
	Policy	Development of	24	Renabilitation	VII - eye	Devices and
Technology	planning	artificial eyes				biomaterials
Foresight survey		featuring				
Japan 1997		electronic circuitry				
		that can be				
		connected to				
		nerve and brain				
		cells				
Science &	Policy	Development of	29	Rehabilitation	VI -	Therapeutic
Technology	planning	methods for			nervous	procedures
Foresight survey		recombining				
Japan 1997		disconnected				
		central nerves				
Loveridge et al	Policy	Practical use of	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	directly visualising		monitoring of	generic	and imaging
		molecular		disease		
		structure at an				
		atomic level (e.g.				
		ultramicroscopy)				
Loveridge et al	Policy	At least 3	21	Treatment and	Other -	Devices and
1998	planning	common diseases		management of	generic	biomaterials
		will be treated by		symptoms and		
		portable or		disease		
		implanted				
		systems that				
		combine				
		individually				
		tailored drug				
		delivery with				
		automatic				
		feedback control				
		from a devices				
		continuously				
		monitoring the				
		condition (e.g.				
		diabetes control)				
Loveridge et al	Policy	Over-the-counter	21	Supporting	Other -	IT systems, eHealth
1998	planning	nucleicacid-based		patients receiving	generic	and mHealth
		tests suitable for		care (designed to		
		self-		be used by		
		administration		individuals)		
		become available				
		for the first time				
Loveridge et al	Policy	Results of more	21	Diagnosis and	Other -	Diagnostic tests
1998	planning	than 50% of all		monitoring of	generic	and imaging
		types of		disease		
		diagnostic tests				
		are available at				
		the point of need				
		within one hour				

Loveridge et al 1998	Policy planning	Widespread use of real time 3-D high resolutiom imaging of physiological and metabolic functions	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	First practical use of non-invasive spectroscopy for in situ chemical pathology	21	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	Practical use of biosensors in a wide range of medical manufacturing and environmental applications	21	Unknown	Other - generic	Devices and biomaterials
Loveridge et al 1998	Policy planning	All common single genes diseases can be treated successfully by gene theraby	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Practical use of gene therapy is extended to the treatment of 30% of major life threatening diseases	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Nucleic acid based diagnostic techniques account for 10% of all diagnostic e work load	21	Diagnosis and monitoring of disease	Other - generic	Organisational programmes
Loveridge et al 1998	Policy planning	First practical use of therapies based on purpose-designed non-peptide molecules which mimic the activity of peptides.	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of polypeptide drugs which are delivered orally and targeted to	21	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)

		specific tissues				
Loveridge et al 1998	Policy planning	Widespread use of cosmaceuticals with scientifically proven effectiveness to treat the sypmtoms of skin ageing (e.g. wrinkles)	21	Health promotion and prevention of disease	XII - skin	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of improved technologies for early diagnosis increases the 5-year survival rate of cancer patients by 50%	21	Diagnosis and monitoring of disease	II - cancers	Diagnostic tests and imaging
Loveridge et al 1998	Policy planning	Practical use of drugs modulating cellular systems to treat cancer	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	Widespread use of nutritional supplements or special diets based on an understading of the role of nutrients such as anti-oxidants in cancer prevention	21	Health promotion and prevention of disease	II - cancers	Population programmes
Loveridge et al 1998	Policy planning	Practical use of substances that contain rather eleminate cancer (e.g. use agents that control metastasis)	21	Treatment and management of symptoms and disease	II - cancers	Drugs (not prophylactic vaccines)
Loveridge et al 1998	Policy planning	New methods of treating arterial occlusion and myocardial infarction dramatically reduce morbidity from cardiovascular diseases in 40-50 age group	21	Treatment and management of symptoms and disease	IX - circulation	Unknown

Loveridge et al	Policy	50% of the UK	21	Health promotion	IX -	Population
Loveridge et al Loveridge et al	Policy planning Policy	50% of the UK population receive individual risk assessment for cardiovascular disease based on genetic screening and lifestyle measures Understanding	21	Health promotion and prevention of disease Treatment and	IX - circulation	Population programmes Therapeutic
1998	planning	the immune system is sufficietly developed to allow routine transplantation without the use of immuno- suupression		management of symptoms and disease		procedures
Loveridge et al 1998	Policy planning	Practical use of xenotransplantati on of organs from animals to human	21	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
Loveridge et al 1998	Policy planning	Incidence of each of the 3 major viral diseases is reduced by 90% by new vaccines or drug development	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Practical use of technologies for oral administration of multi-valent vaccines for the most important childhood illnesses	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Widespread introduction of malaria vaccine reduces the worldwide incidence of the diseases by 50%	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	First effective vaccine of HIV becomes available	21	Health promotion and prevention of disease	I - infections	Prophylactic vaccines
Loveridge et al 1998	Policy planning	Development of drugs with proven	21	Treatment and management of	V - mental health	Drugs (not prophylactic

		efficacy for		symptoms and		vaccines)
		enhancing		disease		vaccines,
		cognitive				
		performance				
Loveridge et al	Policy	50% of patients	21	Diagnosis and	V - mental	Diagnostic tests
1998	planning	presenting with		monitoring of	health	and imaging
		mental illness		disease		
		such as				
		schizphrenia and				
		depression are				
		diagnosed using				
		objective genetic,				
		biochemical or				
		biophysical tests				
Loveridge et al	Policy	50% of surgical	21	Treatment and	Other -	Therapeutic
1998	planning	interventions		management of	generic	procedures
1330	Pidiming	carried out by		symptoms and	Benefic	procedures
		minimum-access		disease		
		technique		discuse		
Loveridge et al	Policy	10% of surgical	21	Treatment and	Other -	Therapeutic
1998	planning	interventions are		management of	generic	procedures
1550	Pidiming	carried out by		symptoms and	Benefic	procedures
		robotic		disease		
		techniques		discuse		
Loveridge et al	Policy	Development of	21	Treatment and	Other -	Devices and
1998	planning	biocompatible		management of	generic	biomaterials
	P.G	materials for		symptoms and	80	
		implants which		disease		
		elicit the required		u.ocacc		
		host response				
		(e.g. non-				
		thrombogenic or				
		stimulation of				
		host repair				
		mechanisms).				
Loveridge et al	Policy	Widespread use	21	Treatment and	XII - skin	Regenerative
1998	planning	for skin replacemt		management of	2	medicine
	p.ag	and/or repair of		symptoms and		
		reliable products		disease		
		based on tissue		and and		
		engineering				
Loveridge et al	Policy	Practical	21	Treatment and	Other -	Regenerative
1998	planning	availability for		management of	generic	medicine
	P. 2	regular clinical use		symptoms and	00	
		of functional		disease		
		human organ				
		tissue for kidney,				
		liver or pancreas				
Loveridge et al	Policy	Widespread use	21	Health promotion	XXI -	Drugs (not
1998	planning	of non-surgical		and prevention of	screening,	prophylactic
1330	Pidilililig	(eg. by		disease	rehab	vaccines)
		(CB. D)		discuse	TCHAD	vaccines)

	1		1	I	1	1
		vaccination) single application				
		contraception offering lifetime				
		control				
Loveridge et al	Policy	50% of	21	Health promotion	XXI -	Drugs (not
1998	planning	contraception		and prevention of	screening,	prophylactic
		involving		disease	rehab	vaccines)
		pharmacological				
		or vaccine				
		methods resides				
		with men				
Loveridge et al	Policy	50% of diagnostic	21	Supporting	Other -	IT systems, eHealth
1998	planning	and treatment		patients receiving	generic	and mHealth
		decisions involve		care (designed to		
		use of expert		be used by		
		systems		individuals)		
Loveridge et al	Policy	20% of time spent	21	Supporting	Other -	IT systems, eHealth
1998	planning	by doctors in		patients receiving	generic	and mHealth
		primary care		care (designed to		
		screeing is		be used by		
		replaced by		individuals)		
		patient				
		interaction with	6			
	D 1:	experts systems	24		0.1	
Loveridge et al	Policy	Practical use of	21	Supporting	Other -	IT systems, eHealth
1998	planning	remote electronic		patients receiving	generic	and mHealth
		systems which substitute human		care (designed to be used by		
		labour in		individuals)		
		montoring the		marviadais)		
		physical				
		parameter of				
		elderly and people				
		with disability in				
		the community				
Loveridge et al	Policy	Widespread use	21	Supporting the	Other -	IT systems, eHealth
1998	planning	of unified and		provision of care	generic	and mHealth
		standardised		and/or increasing		
		electronic data		service efficiency		
		collection systems				
		and data				
		informats for				
1	D. II	medical records	24	6	Out	IT and a second
Loveridge et al	Policy	At least 50% of	21	Supporting the	Other -	IT systems, eHealth
1998	planning	health care		provision of care	generic	and mHealth
		centres (hospitals,		and/or increasing		
		clinic,etc) are connected to		service efficiency		
		national				
		information				
	1	Innormation		<u> </u>		

		1	ī		T	1
		electronic				
		networks for				
		patient records				
		and information				
		on diagnosis,				
		treatment and				
		outcome				
Loveridge et al	Policy	Widespread use in	21	Supporting the	Other -	IT systems, eHealth
1998	planning	health care of		provision of care	generic	and mHealth
		electronic		and/or increasing		
		information		service efficiency		
		systems which		,		
		span existing				
		professional and				
		organisational				
		boundries (health,				
		social service,				
Lavaridae et al	Delieu	housing etc)	21	Haalth muanaatian	VVI	Donulation
Loveridge et al	Policy	Improved	21	Health promotion	XXI -	Population
1998	planning	understanding of		and prevention of	screening,	programmes
		the role of gene-		disease	rehab	
		environment				
		interactions in				
		causing common				
		structural birth				
		birth defects (e.g.				
		cleft palate)				
		permits the				
		implementation of				
		primary				
		preventable				
		programmes				
Loveridge et al	Policy	Understanding	21	Health promotion	XXI -	Population
1998	planning	how		and prevention of	screening,	programmes
		environmental		disease	rehab	
		factors				
		encountered in				
		early life cause				
		adult disease				
		leads to national				
		standards for diet				
		and lifestyle in				
		pre-natal and				
		early life				
Loveridge et al	Policy	Widespread use	21	Health promotion	Other -	Organisational
1998	planning	of financial		and prevention of	generic	programmes
		inducements by		disease	J	F 20. 3
		national and				
		private health				
		insurers or similar				
		bodies to adopt				
		Dodles to adopt				

		healthier lifestyle or diets				
Loveridge et al 1998	Policy planning	The causes of the rising prevalence of asthma are elucidated and action based on this knowledge leads to a 50% reduction in the incidence of severe disease	21	Health promotion and prevention of disease	X - respiratory	Population programmes
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	X-ray replaced by Magnetic Resonance Imaging (MRI)	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	operating theatre of 2010 will be built with an ultra-open MRI system with parallel ultrasound facilities and complete optical capability	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Endoscopes will reduce in size as fibres, lenses and electronic sensors get smaller,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	ccd image sensors have the ability to see in both ultra-violet and near infrared.	14	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	New magnetic sensing technologies will detect the configuration of the endoscope and accessory devices inside the patient.	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Devices and biomaterials

Operating theatre	Policy	Auto focus and	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	zoom optical	14	monitoring of	generic	and imaging
Department of	hiamini	systems will be		disease	genenc	and magnig
· ·		interfaced with 30		uisease		
Trade and						
Industry		to take the				
		endoscope				
		imaging				
		capability beyond				
		what is currently				
		possible with				
		human vision.				
Operating theatre	Policy	High resolution	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	ultrasound in		monitoring of	generic	and imaging
Department of		closer proximity		disease		
Trade and		to the tissue and				
Industry		structures to be				
		studied				
Operating theatre	Policy	Laser induced	14	Diagnosis and	II - cancers	Diagnostic tests
of the year 2010;	planning	fluorescence		monitoring of		and imaging
Department of		imaging systems		disease		
Trade and		for diagnosis of				
Industry		early malignant				
,		changes,				
		monitoring				
		and therapy will	6			
		become available.				
Operating theatre	Policy	Near infra-red	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	spectroscopy, for		monitoring of	generic	and imaging
Department of	'	looking at tissue		disease	3	
Trade and		oxygenation state				
Industry		70				
Operating theatre	Policy	Confocal, or other	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	optical, ultrasonic		monitoring of	generic	and imaging
Department of	, p.a	or magnetic		disease	80	
Trade and		resonance		disease		
Industry		microscopy, for				
industry		on-line histology				
		of bulk samples				
Operating theatre	Policy	Minimal Access	14	Treatment and	Other -	Therapeutic
of the year 2010;	planning	Surgery is likely to		management of	generic	procedures
Department of	Pidililig	account for as		symptoms and	generic	procedures
Trade and		much as 75% of		disease		
Industry		surgical		uiscase		
industry		_				
Operating theatre	Policy	procedures	1/	Troatment and	Other -	Modical aquiament
Operating theatre	Policy	Robotic camera	14	Treatment and		Medical equipment
of the year 2010;	planning	holders are likely		management of	generic	
Department of		to become routine		symptoms and		
Trade and		in laparoscopic		disease		
Industry		procedures.				

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table's control system and the robotics system could become integrated in the future operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Ability to ventilate all patients from neonates to adults	14	Treatment and management of symptoms and disease	X - respiratory	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Control handsets will incorporate dot matrix displays which will give the operator information about the condition of the table, position of the top and warnings about possible hazards	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating table may have a built-in patient temperature regulation system.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Connection between the Operating Room and the Anaesthetic machine in the Control Room will be via the Anaesthetist in the Operating Room.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The Anaesthetic machine will incorporate both inhalation agent vaporisation and multi-drug infusion systems These devices will be electronically integrated into the monitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

	T	Γ				,
		and information				
		management and				
		anaesthetic				
		record keeping				
		system so that				
		vaporiser				
		concentration				
		settings and				
		infusion rates will				
		be continuously				
		recorded				
Operating theatre	Policy	Mechanical flow-	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	meters will be	- '	provision of care	generic	medical equipment
Department of	piarining	replaced by		and/or increasing	Beriefie	
Trade and		electronic gas		service efficiency		
				Service efficiency		
Industry Operating theatre	Policy	mixing systems Patient	14	Cupporting	Other -	IT systems allealth
Operating theatre	Policy		14	Supporting		IT systems, eHealth
of the year 2010;	planning	monitoring will be		patients receiving	generic	and mHealth
Department of		very simple and		care (designed to		
Trade and		intuitive probably		be used by		
Industry		touch screen and		individuals)		
		quite possibly				
		voice activation.				
Operating theatre	Policy	Monitors will also	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	network into		patients receiving	generic	and mHealth
Department of		central areas		care (designed to		
Trade and		outside the		be used by		
Industry		operating theatre		individuals)		
		so that, for				
		example,				
		anaesthetics being				
		delivered by less				
		experienced staff				
		can be monitored				
		remotely.				
Operating theatre	Policy	The operation	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	room will capture		patients receiving	generic	and mHealth
Department of		the data from one		care (designed to		
Trade and		or perhaps two		be used by		
Industry		small 'wireless'		individuals)		
		sensors placed on				
		the body that will				
		provide pulse				
		oxyimetry C02,				
		ECG and other key				
		parameter data				
		and then transmit				
		them to the				
		monitor via radio				
		or IR technology.				

Operating theatre	Policy	Patient will be	14	Supporting	Other -	Devices and
of the year 2010;	planning	equipped with a		patients receiving	generic	biomaterials
Department of		belt (or other		care (designed to		
Trade and		suitable garment)		be used by		
Industry		into which all		individuals)		
		monitoring and				
		feed lines will be				
		terminated, and				
		which will include				
		significant active				
		capability. Drip				
		and other lines				
		will also be				
		terminated in the				
		belt				
Operating theatre	Policy	Patient can be	14	Supporting	Other -	IT systems, eHealth
of the year 2010;	planning	"plugged" into		patients receiving	generic	and mHealth
Department of		electrical support,		care (designed to		
Trade and		monitoring and		be used by		
Industry		stimulation as		individuals)		
		well as fluid and				
		chemical agents				
		using a single				
		connector to				
		facilitate transfer				
		of patient from one ward to				
		another or from				
		the operation				
		theatre				
Operating theatre	Policy	Operation lamp	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	will be replaced		provision of care	generic	
Department of		by a better light		and/or increasing	0	
Trade and		source		service efficiency		
Industry						
Operating theatre	Policy	Automatic control	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	of light pattern in		provision of care	generic	' '
Department of		the operation		and/or increasing		
Trade and		theatre		service efficiency		
Industry				4		
Operating theatre	Policy	The operating	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	lamp of the future		provision of care	generic	
Department of		is likely to use		and/or increasing		
Trade and		much more		service efficiency		
Industry		electronics to				
		accurately control				
		the voltage,				
		dimming, focus,				
		tracking and to				
		limit maximum				
		light intensity to				

		safe levels.				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operating lamps of the future will be sealed for easy disinfection	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemedicine	14	Unknown	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telemonitoring	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Teleconsultation	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Telesurgery for demonstartion or teaching	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Minimal access surgery (MAS)	14	Treatment and management of symptoms and disease	Other - generic	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Systems in which as much of the patient's own blood is recovered and recycled as possible.	14	Treatment and management of symptoms and disease	III - blood	Non-surgical therapy
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Use of flexible endoscope technology to allow surgeons to see around and behind structures, giving the surgeon greater access and the patient a greater degree of safety.	14	Treatment and management of symptoms and disease	XI - GI tract, dental health	Devices and biomaterials

Operating theatre	Policy	A move away	14	Diagnosis and	Other -	Diagnostic tests
of the year 2010;	planning	from the use of X-	14	monitoring of		and imaging
Department of	hiaiiiiiig	rays and image		disease	generic	anu magmg
Trade and		intensification		uisease		
		towards more				
Industry						
		mobile methods				
Ou a national threature	Delie	of MRI scanning.	1.4	Tuestas ant and	Other	The area as at it.
Operating theatre	Policy	Developments in	14	Treatment and	Other -	Therapeutic
of the year 2010;	planning	the use of laser		management of	generic	procedures
Department of		and particularly		symptoms and		
Trade and		electrosurgery		disease		
Industry	D. U.	The Colors	4.4	C	Other	NA - I' - I I' I
Operating theatre	Policy	Use of robotics	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	and head up		provision of care	generic	
Department of		display allowing		and/or increasing		
Trade and		surgeon sitting in		service efficiency		
Industry		a control room				
		rather than being				
		in the theatre				
		with the patient				
Operating theatre	Policy	Coding will be	14	Supporting the	Other -	IT systems, eHealth
of the year 2010;	planning	used to associate		provision of care	generic	and mHealth
Department of		patient, operating		and/or increasing		
Trade and		procedure (and so		service efficiency		
Industry		appropriate tools				
		and drugs),				
		support facilities				
		and to generate				
		automatic records				
		of usage.				
Operating theatre	Policy	Tools and devices	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	for a procedure		provision of care	generic	
Department of		will be located in a		and/or increasing		
Trade and		carousel		service efficiency		
Industry		analogous to that				
		for a computer				
		numerically				
		controlled				
		machine tool. This				
		will allow the				
		surgeon to				
		present his tool				
		holder to it, have				
		the old tool				
		extracted and a				
		new one inserted.				
Operating theatre	Policy	Robots will be	14	Supporting the	Other -	Medical equipment
of the year 2010;	planning	used as transport		provision of care	generic	
Department of		vehicles both		and/or increasing		
Trade and		within the		service efficiency		
Industry		operating room				

		and for the surrounding support areas				
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will carry out very precise procedures controlled by the surgeon from a distance,	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Joint replacement be performed robotically	14	Treatment and management of symptoms and disease	XIII - musculoske letal	Therapeutic procedures
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	The operation theatre may be controlled by a robot "software" box th at will respond to voice recognition of the surgeon and change factors such as the heating of the theatre, the lighting and position of the table	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A robot would be able to transfer sterile instrument trays from a central sterile store to the surgeon at the operating table.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Transport Robots could be used in the supply and disposal functions outside the operating room within the operating suite	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Robots will be used in moving patients from ward to theatre areas (to replace the use of porters)	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment

Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Using dedicated robot trucks similar to the supply trucks, waste could be collected on a regular basis from each theatre and taken to an automatic local waste reduction/disposal facility adjacent to the theatre suite.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Disposal of hospital material could be performed on site with the use of machines such as "needle eaters"	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Bulky X-Ray machines will probably be a thing of the past and replaced by computerised radiology	14	Diagnosis and monitoring of disease	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	A central control room, with visual links to each theatre served, could house all of the equipment.	14	Supporting the provision of care and/or increasing service efficiency	Other - generic	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	All theatres could be designed with ultra-clean ventilation systems or an adapted containment system to reduce the risk of the spread of infection	14	Health promotion and prevention of disease	I - infections	Medical equipment
Operating theatre of the year 2010; Department of Trade and Industry	Policy planning	Patients identification bracelets could be coded and bar checked as they moved through	14	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment

Operating theatre	Policy	the system so that their progress could be monitored at all times Automated	14	Supporting the	Other -	Medical equipment
of the year 2010; Department of Trade and Industry	planning	trolleys and doors that can be electronically controlled by robots		provision of care and/or increasing service efficiency	generic	Wedieur equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Further development of 3D imaging techniques.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Fluorescenceassist ed Resection and Exploration (FLARE) technologies, which combine both visible light imaging with near-infra red imaging of fluorescent biomarkers, can detect particular pathologies associated with tumours without the need for biopsy	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Colour X-ray or TEDDI imaging can be used to biopsy tissues by utilising scattered X-rays to build a spatially-resolved picture that can distinguish between different materials.	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	In vivo neuroimaging, both at the tissue and cellular level	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the	Policy planning	Brain imaging techniques such as functional	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging

2020s, 2010		magnetic resonance				
		imaging (fMRI)				
UK technology	Policy	Lab-on-a-Chip	10	Diagnosis and	Other -	Diagnostic tests
and innovation futures for the 2020s, 2010	planning	(LOC) devices integrate and scale-down biomedical and		monitoring of disease	generic	and imaging
		other analytical laboratory functions and processes to a				
		miniaturised chip format.				
UK technology	Policy	Nucleic acid	10	Diagnosis and	Other -	Diagnostic tests
and innovation	planning	probes and		monitoring of	generic	and imaging
futures for the		diagnostic		disease		
2020s, 2010		microarray				
		systems can detect the nucleic				
		acid sequence or				
		sequences that				
		identify a specific				
		infectious disease				
		agent, human				
		genetic disease or individual (DNA profiling).				
UK technology	Policy	A new focus on	10	Treatment and	Other -	Regenerative
and innovation	planning	single-stranded		management of	generic	medicine
futures for the		DNA, micro RNA		symptoms and		
2020s, 2010		(miRNA) and		disease		
		double-stranded				
		RNA (dsRNA) technologies as				
		therapeutics may				
		lead to clinically-				
		approved				
		interventions for				
		gene therapy and				
		treatment of medical disease.				
UK technology	Policy	RNA interference	10	Treatment and	Other -	Regenerative
and innovation	planning	(RNAi) may lead		management of	generic	medicine
futures for the		to new		symptoms and		
2020s, 2010		treatments.		disease		
UK technology	Policy	Viruses, bacteria	10	Treatment and	Other -	Regenerative
and innovation	planning	or yeasts may be		management of	generic	medicine
futures for the 2020s, 2010		able to act as carriers for new		symptoms and disease		
20203, 2010		sequences of DNA		uisease		

LIV tachnalagu	Dollar	Ingrascad	10	Diagnosis and	III - blood	Drugs In at
UK technology	Policy	Increased	10	Diagnosis and	III - blood	Drugs (not
and innovation	planning	understanding of		monitoring of		prophylactic
futures for the		individual		disease		vaccines)
2020s, 2010		sensitivities to				
		drugs				
UK technology	Policy	DNA vaccines for	10	Health promotion	Other -	Prophylactic
and innovation	planning	AIDS, malaria,		and prevention of	generic	vaccines
futures for the		hepatitis B and		disease		
2020s, 2010		certain cancers				
		may be available				
		within 10 years				
UK technology	Policy	New treatments	10	Treatment and	VI -	Unknown
and innovation	planning	for for		management of	nervous	
futures for the		neurodegenerativ		symptoms and		
2020s, 2010		e conditions such		disease		
,		as dementia.				
UK technology	Policy	'Cognition	10	Treatment and	VI -	Drugs (not
and innovation	planning	enhancers';		management of	nervous	prophylactic
futures for the	,	substances that		symptoms and		vaccines)
2020s, 2010		enhance the		disease		14460111657
20203, 2010		performance of		discuse		
		our brain in				
		specific ways,				
		such as improving				
		short-term				
		memory and				
		increasing our				
		speed of thought				
		enhancement				
		through lifestyle				
		drugs may will				
	D 1:	become the norm.	40			5 / .
UK technology	Policy	'Emoticeuticals',	10	Treatment and	V - mental	Drugs (not
and innovation	planning	drugs that act by		management of	health	prophylactic
futures for the		changing		symptoms and		vaccines)
2020s, 2010		hormone levels in		disease		
		the body, may				
		mediate our				
		responses in our				
		private lives and				
		work.				
UK technology	Policy	Sensoceuticals'	10	Treatment and	Other -	Drugs (not
and innovation	planning	might enhance		management of	generic	prophylactic
futures for the		pleasure by		symptoms and		vaccines)
2020s, 2010		restoring or		disease		
		accentuating the				
		senses.				
UK technology	Policy	The advent of a	10	Health promotion	V - mental	Drugs (not
and innovation	planning	drug that mimics		and prevention of	health	prophylactic
futures for the		the positive		disease		vaccines)
2020s, 2010		effects of alcohol				

		with none of its drawbacks.				
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells replacing malfunctioning liver cells or even growing entire livers to replace diseased ones	10	Treatment and management of symptoms and disease	XI - GI tract, dental health	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new neurons to those with brain damage	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving new heart cells to those with heart disease	10	Treatment and management of symptoms and disease	IX - circulation	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for Parkinson's and Alzheimer's diseases	10	Treatment and management of symptoms and disease	VI - nervous	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Stem cells giving therapies for spinal cord injury, stroke, cancer, burns, cardiovascular disease, diabetes, osteoarthritis and rheumatoid arthritis; as well as furnishing an endless supply of red blood cells for transfusions.	10	Treatment and management of symptoms and disease	Other - generic	Regenerative medicine
UK technology and innovation futures for the 2020s, 2010	Policy planning	Development of a cheap anti-malarial drug.	10	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
UK technology and innovation futures for the 2020s, 2010	Policy planning	Programming a bacterium or virus that can identify malignant cells and can deliver a therapeutic agent could have major benefits for treating cancer and similar illnesses	10	Treatment and management of symptoms and disease	II - cancers	Regenerative medicine

UK technology	Policy	Stratified	10	Diagnosis and	Other -	Diagnostic tests
and innovation	planning	medicine: it will		monitoring of	generic	and imaging
futures for the		become		disease		
2020s, 2010		increasingly				
·		possible to				
		analyse an				
		individual for				
		certain				
		biomarkers to				
		determine the				
		best course of				
		treatment				
UK technology	Policy	Personalised	10	Treatment and	Other -	Drugs (not
and innovation	planning	medicine		management of	generic	prophylactic
futures for the				symptoms and		vaccines)
2020s, 2010				disease		
UK technology	Policy	In-situ tissue	10	Treatment and	Other -	Regenerative
and innovation	planning	regeneration:		management of	generic	medicine
futures for the		Material is		symptoms and		
2020s, 2010		implanted directly		disease		
		in the body and				
		regenerates the				
		tissue over time				
		as the material				
LUZ La ala calla a	D. II.	degrades.	10	T	Other	D
UK technology	Policy	Tissue	10	Treatment and	Other -	Regenerative
and innovation	planning	engineering:		management of	generic	medicine
futures for the		Material can act		symptoms and disease		
2020s, 2010		as temporary scaffold for cell		uisease		
		culture and tissue				
		growth in vitro				
UK technology	Policy	Micro-masonry	10	Treatment and	Other -	Regenerative
and innovation	planning	and 3D organ	10	management of	generic	medicine
futures for the	P.G	printing		symptoms and	8000	
2020s, 2010		techniques		disease		
UK technology	Policy	Brain Computer	10	Rehabilitation	Other -	Devices and
and innovation	planning	Interface			generic	biomaterials
futures for the						
2020s, 2010						
UK technology	Policy	Neuroprosthetics:	10	Rehabilitation	VI -	Devices and
and innovation	planning	the connection			nervous	biomaterials
futures for the		can occur				
2020s, 2010		between any part				
		of the nervous				
		system (such as				
		peripheral nerves)				
		and a device.				

UK technology and innovation futures for the 2020s, 2010	Policy planning	Magnetoencephal ography (MEG): maps brain activity by recording the magnetic fields produced by electrical currents occurring in the brain	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional magnetic imaging (fMRI) – involves measuring changes in blood flow related to neural activity in the brain.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	functional Near- Infrared Spectroscopy (fNIRS) for optical topography	10	Diagnosis and monitoring of disease	Other - generic	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Electrocorticograp hy (EoCG), measure the electrical activity of the brain using electrodes which are implanted inside the skull, but outside the brain tissue.	10	Diagnosis and monitoring of disease	VI - nervous	Diagnostic tests and imaging
UK technology and innovation futures for the 2020s, 2010	Policy planning	Implanted brain chips for controlling computers	10	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Neural prosthetics replace lost limbs	5	Rehabilitation	XXI - screening, rehab	Devices and biomaterials
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled robots for personal healthcare	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	Medical equipment
UK technology and innovation futures for the 2020s, 2010	Policy planning	Thought- controlled wheelchairs	10	Rehabilitation	XXI - screening, rehab	Medical equipment

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UK technology and innovation futures for the 2020s, 2010	Policy planning	ehealth: Examples include health information networks, electronic health records, telemedicine services, personal wearable and portable mobile devices, health portals and other tools that assist in health monitoring, diagnosis and treatment.	10	Supporting the provision of care and/or increasing service efficiency	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Lab-on-a-chip technologies could also bring diagnostics down to a personal scale, where patients can test themselves and transmit data electronically for analysis and treatment.	10	Supporting patients receiving care (designed to be used by individuals)	Other - generic	IT systems, eHealth and mHealth
UK technology and innovation futures for the 2020s, 2010	Policy planning	Tailored Medicine	10	Treatment and management of symptoms and disease	Other - generic	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	The anti-viral medicine with highly efficiency applies to clinical medicine widely	17	Treatment and management of symptoms and disease	I - infections	Drugs (not prophylactic vaccines)
Technology foresight towards 2020_China	Policy planning	standardized safe evaluation system which include the technology for monitoring and examination of trans-gene biology will be established;	17	Supporting the provision of care and/or increasing service efficiency	Other - generic	Organisational programmes